THE BUSINESS CYCLE, DEMAND FOR CONSTRUCTION AND APPROPRIATE SELLING METHODS FOR CONTRACTORS

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Despite the help and advice provided by others, the contents of this dissertation, in it's entirety, are the thoughts and findings of the author.

R D HINDLE
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SYNOPSIS

This dissertation is a record of research into two distinct areas that are brought together to test the primary hypothesis. These two areas are; the general business cycle and its effects of the performance of construction companies and the methods by which general contractors in the building industry, are able to market and sell their services or products.

In part one, it is shown that there is a relationship between the business cycle and the demand for construction. The latter expands and contracts in sympathy with the cycle. The effects of the changes in the level of demand for buildings are analyzed and fully described, resulting in a model which can be used to determine the sequence of effects for each phase of the business cycles.

In part two, the methods by which contractors are selected and sell their service or product are analyzed and compared. The usage of each system is measured and it is found that change has occurred, the reasons for such change are investigated in order to gain an insight into potential future developments. This has been done in a way that is intended to strip the subject of it's mystique and confusion of terminology by the application of basic economic and marketing principles. New and improved terminology is suggested.

The findings show that construction contractors can choose from a variety of 'selling systems'. These systems will provide competitive advantage to those who are able to predict the likely turning points of the business cycle and use those 'selling systems' that are appropriate to specific stages of the business cycle.

The research was conducted by finding, analyzing and interpreting various time series data, by surveying architects quantity surveyors and contractors for facts and figures that were not available elsewhere, and by conducting a through survey of published books, articles and research papers.

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The figures which contain graphs have been 'shaded' through specific time periods. Such shaded areas are the official economic growth cycle phases, as recorded by the South African Reserve Bank.

GLOSSARY OF ABBREVIATIONS

AIQS:

Australian Institute of Quantity Surveyors.

BCI:

Building Cost Index, produced by the Bureau for Economic Research, University of Stellenbosch.

BER:

Bureau for Economic Research , University of Stellenbosch.

BIFSA:

Building Industries Federation of South Africa

BPF:

British Property Federation.

CIOB:

The Chartered Institute of Building, United Kingdom.

CPAP:

Contract Price Adjustment Provision.

MBA:

Master Builders Association, Cape Peninsula.

NAHB:

National Association of Home Builders.

RIBA:

Royal Institute of British Architects

SAFCEC:

The South African Federation of Civil Engineering Contractors, an employers organisation.

SAPOA:

South African Property Owners Association.

GLOSSARY OF TERMS

Amplitude:

Measure of the total change in the time series through an entire cycle.

Bidding: (Tendering)

Offering a price for service to be rendered in competition. market will bear.

Bills of Quantities:

The measured, and therefore quantified, description of work in a proposed building contract. A contract document.

Building cycle:

The short term building cycle, unless otherwise described.

Building procurement systems:

The procedural path or activities undertaken by a client who wishes to obtain a new building.

Business cycle:

The ebb and flow that periodically occurs in the Gross National Product of a Nation, which is more accurately termed, the Short Term Business Cycle. (STBC)

Client:

A customer who wishes to engage the services of a contractor.

Competitive Tendering System: (Competitive bidding)

When two or more contractors tender, or bid, for the same work which may be described on drawings and in a specification, or in a Bill of Quantities with a specification.

Construction Companies:

Companies that undertake general contracting.

Contractor:

A person or company that undertakes to assemble buildings.

Cost:

Refers to the cost to the contractor in this document, not the price to the client.

Cost plus:

A contractual arrangement whereby the contractor is paid for the net cost of labour, plant and materials plus an agreed percentage to cover overheads and profit.

Cost reimbursement:

A contractual arrangement whereby the contractor is paid the net cost he has paid out. (one of two fundamental methods of contract payment the other being 'Fixed Price')

Depression:

A prolonged recession, when rate of unemployment lies between 12 and 20 percent. If this persists for six years or more, it is then a great depression.

Design and build contract:

A contractual arrangement whereby the contractor offers to design and build the project for a fixed fee. (sometimes known as a 'Package Deal')

Fixed Price:

One of two fundamental methods of contract payment (the other being cost reimbursement), based on an estimated figure calculated in advance of the work being carried out, to which is added an allowance for risk and a factor to reflect the state of the market and the contractor's workload.

General Contracting:

Erection, restoration and alteration of all types of buildings.

Management contracting:

A contractual arrangement whereby a contractor is paid a fee to manage the building of a project on behalf of the employer, in essence, a contract to manage rather than to build.

Mark-up:

The factor (usually a percentage) that is added to a contractors estimate to allow for overheads and profit.

Negotiated contract:

The settlement of a contract price by agreement instead of being awarded as a result of competition.

Private sector construction:

Construction work in the private sector, ie. private enterprise, not Government.

Public sector construction:

Construction work in the public sector, ie. Government.

Recession:

When two consecutive quarterly measurements of the GNP as reported by the South African Reserve Bank, indicate a decline in real terms when measured against the preceding quarter.

Tender:

An offer to carry out work at a price.

Turnkey contract:

Contractor provides the total input, finance, design and construction.

Turnover:

The amount of work completed in a twelve month period in monetary terms. (selling price)

CHAPTER 1

THE PROBLEM AND ITS SETTING

> *The industry is impotent to modify the cyclical flow of demand on it's own. It is an industry which can only react.*
> Kilian (1976) p.190.

1.1 STATEMENT OF THE PROBLEM

The above statement would seem to be a point of view that enjoys widespread acceptance by persons who are involved in the construction process. However, Hillebrandt (1974) whilst advising the industry to accept that it is subject to fluctuations in demand, stated that it must find ways to alleviate some of the undesirable effects, thus implying, that it should be possible to manage the fluctuations.

The ability to manage demand fluctuations, in order to maintain an even workload with a reasonable level of profitability, is an extremely important function of the chief executive of any construction company, and yet, it is an area of research and expertise which would seem to be sadly neglected. Skitmore (1989), in the introduction to his book entitled "Contract bidding in construction", stated

> *One would expect to obtain guidance on these aspects by reference to books on either strategic management or bidding strategy. Unfortunately, this seems not to be the case.*

Most managers in the construction industry are aware of the fluctuations in volume very few understand why they occur. De Kock (1975), in a paper entitled "The business cycle in South Africa - Recent tendencies", described the lack of awareness of business cycles and accused businessmen of tending to act as if boom conditions would never end, when in an upswing phase, and as if recessionary conditions would be permanent, when in a downswing phase.

In South Africa the time period between one recessionary phase of the Short Term Business cycle and the next have occurred at intervals of approximately three to five years, a time period which is shorter than the cycles in Europe and the USA but in keeping with other developing countries, World Bank, (1984). This, perhaps, is one reason why this area of research has been neglected, the greatest output of research being in the developed countries where cycles are much longer.

The high incidence of insolvency in the construction industry is a well known fact. It is often attributed to the deficiencies of the competitive bidding method of achieving a sale. Brink (1989) and Clogg (1989) both described the situation that is found during a recession when contractors offer lump sum prices that are often below the estimated cost of production. However, the industries' apparent dependence on this selling method would seem to be falling away, perhaps in an attempt to avoid the worst effects of demand fluctuation.

In a paper entitled "Challenge and innovation: The challenge to the construction industry", Gale and Fellows (1990) made the following recommendation:

> *Procurement. The role played by the client and the nature of the client should be explored. Education of clients is worthy of debate. Procurement systems and their integration of design and construction processes need to be considered in the context of technological change, economic decision criteria and, risk analysis and management. The process of innovation and professional roles in the procurement context have to be opened up.*

For these reasons the author is of the opinion that research into this topic is both relevant and overdue.

1.2 SUMMARY OF THE PROBLEM STATEMENT

Is it possible for construction companies to detect and react to changes in demand by using alternative selling systems in order to avoid the disruptive effects of the business cycle and to maintain an even flow of work with an acceptable level of mark-up ?

1.3 THE SUB PROBLEMS

The problem statement contains a number of sub problems. These sub problems will be isolated and a hypothesis will be postulated for each of them.

Sub problem No 1

Is it possible to predict changes in the level of demand for construction work in the marketplace ?

Sub problem No 2

What are the effects of fluctuations in the demand for construction work, on construction companies ?

Sub problem No 3

Can construction contractors choose the system that will be used when selling their services or products ?

Sub problem No 4

Are certain methods of selling construction company services more suitable than others for coping with demand fluctuations ?

1.4 THE HYPOTHESES

Two levels of Hypothesis are set out below, one named the 'Primary Hypothesis' because it concerns the problem area as a whole and a second, named 'Sub Hypotheses', of which there are four, one for each sub-problem.

1.4.1 PRIMARY HYPOTHESIS.

Contractors can maintain reasonably consistent levels of turnover and profitability, if they understand the effects of the business cycle, are able to predict the turning points and, as a result, change the specific methods that they may use, for marketing and selling their products and services, to suit a particular phase of the cycle.

1.4.2 SUB HYPOTHESES.

Sub Hypothesis No 1

Changes in the demand for construction are closely linked to the business cycle. When in a recovery phase, demand will be high though it will 'lag' the cycle by several months. When the cycle is in the recession phase demand will be weak.

Sub Hypothesis No 2

The greatest effect of fluctuating demand is its effect on the degree of competition amongst contractors which, in turn, will affect turnover, profitability and several other key aspects of the trading environment relative to the stage of the business cycle.

Sub Hypothesis No 3

It has been the tradition for construction companies to use the 'competitive tendering system' as the principal method of selling their services, but the current trend is towards other methods.

Sub Hypothesis No 4

Sales methods that reduce the degree of competition between contractors will help them to ensure the maintenance of turnover and profitability through the recession phase of the business cycle.

1.5 THE DELIMITATIONS

This research is based upon the South African short term business cycle because of the opportunity which the short duration between turning points presents, in terms of the availability of the data. However, the findings will be applicable in most other countries.

Only General Contractors of medium to large size are considered in this study because of the wide disparity that exists between them and the small scale construction contractor in terms of, scale, client type and selling methods used.

1.6 THE ASSUMPTIONS

The construction industry.

The construction industry encompasses 'building' and 'civil engineering' and four main 'sectors' are identified:

(i) Civil engineering works
(ii) Residential buildings
(iii) Non-residential buildings
(iv) Minor works (Additions and alterations)

Each sector is further split in terms of the customer type:

(i) Public sector
(ii) Private sector

Various sub-sectors are found by creating divisions within each sector, i.e., in the Non-residential sector:

(i) Industrial
(ii) Commercial
(iii) Educational
(iv) Religious

Selling a 'product' or a 'service'?

General contractors in their traditional role provide a 'service'. They bring together the necessary resources and manage them through the building assembly process. They can be said to offer products for sale only when they undertake property development (build speculatively) or if they own the rights to a patented design or building system.

The business cycle turning points

Each of the Figures that display information against a time scale have been provided with a shaded 'over-lay'. This shading represents the growth phase of the business cycle as recorded by the South African Reserve Bank. A list of turning points is provided in **Table 1.1.**

TABLE 1.1 POST WAR BUSINESS CYCLES IN SOUTH AFRICA

Source: Cloete (1990)

LOWER TURNING POINT (TROUGH)	LENGTH OF EXPANSION (MONTHS)	UPPER TURNING POINT (PEAK)	LENGTH OF CONTRACTION (MONTHS)	LENGTH OF CYCLE TROUGH TO TROUGH (MONTHS)
JUL 1945	12	JUL 1946	9	21
APR 1947	19	NOV 1948	15	34
FEB 1950	22	DEC 1951	15	37
MAR 1953	25	APR 1955	17	42
SEP 1956	16	JAN 1958	14	30
MAR 1959	13	APR 1960	16	29
AUG 1961	44	APR 1965	8	52
DEC 1965	17	MAY 1967	7	24
DEC 1967	36	DEC 1970	20	56
AUG 1972	24	AUG 1974	40	64
DEC 1977	44	AUG 1981	19	63
MAR 1983	15	JUN 1984	23	38
MAY 1986	33	MAR 1989		

1.7 ORGANISATION OF THE REMAINDER OF THE STUDY

This is Chapter one and the balance of the document will be set out as follows:

Chapter two will describe Data Sources and the Research Methodology, after which the body of this dissertation, which entails research into two broad and dissimilar areas, is separated into two separate sections:

* Part 1 is concerned with demand fluctuations and their relationship to business cycles,

* Part 2 with construction sales methods and procurement systems.

Chapters three and six are concerned with the review of related literature for each part. Chapters four, five, seven and eight each address one of the four sub problems and hypotheses, whilst, the primary hypothesis is tested in chapter nine.

A graphic presentation of the dissertation structure is provided in **Figure 1.1**, overpage.

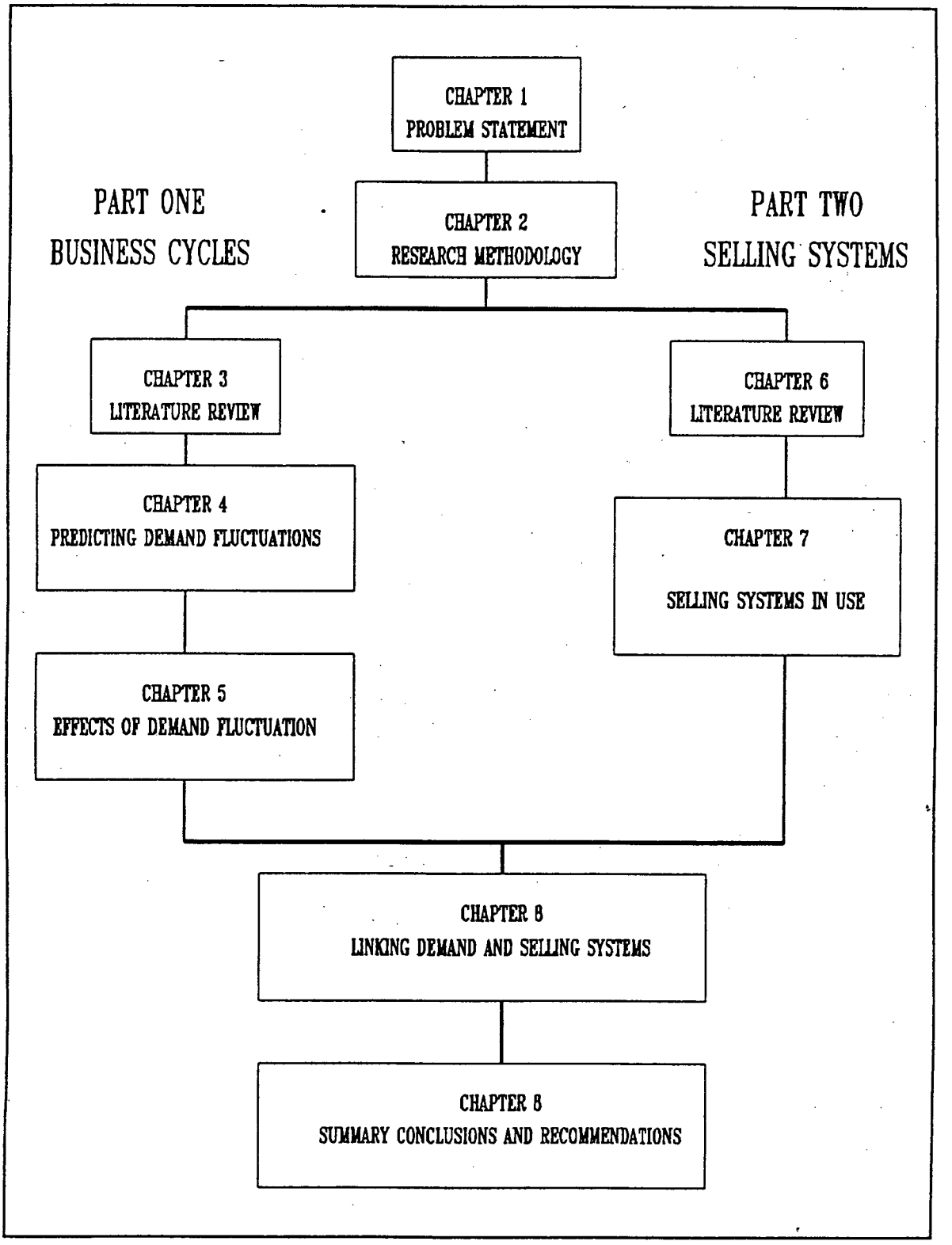


FIGURE 1.1 SCHEMATIC LAYOUT OF THE DISSERTATION

CHAPTER TWO

SOURCES OF DATA AND RESEARCH METHODOLOGY

In this chapter the sources of the information which is used in the dissertation are described, as are the methods of collection and processing of data.

2.1 RESEARCH METHODOLOGY

Empirical research, conducted during a career spanning thirty years, was used to identify the problem and possible solutions. All of the effects of demand fluctuation and most of the selling systems have been experienced by the author but every attempt has been made to substantiate all of the theories and statements made by the use of scientific research methods.

Three basic scientific research methods have been used to produce the findings and conclusions. These are:

The historical method
The descriptive survey method
The analytical survey method

Two distinct subject areas have necessitated this approach, one statistical and the other procedural.

Historical data were used to determine the effects of the business cycle on the industry and to establish the formation of traditional building procurement systems.

The descriptive survey method has been used to establish the majority of effects resulting from demand fluctuations and to determine the building procurement systems in use.

The analytical survey method has been used to process time series data, relevant to the business cycle, and to determine the frequency of use of the various building procurement systems.

2.2 SOURCES OF DATA

The data that are required in order to test the hypotheses contained in Chapter 1 were collected by utilising written records and accounts of past research and happenings, which will include a survey of related literature. In addition to this, where no such information is on record or where it is not applicable to South Africa, surveys were conducted. Sources for each specific area of the research are detailed below.

2.2.1 BUSINESS CYCLES AND BUILDING CYCLES

A number of types and sources of data have been used;

(i) Time series

In order to plot economic trends over a period of time 'time series' data are required. There are two types of data, quantitative and qualitative. Quantitative data is classified in two series, depending upon the method used to measure them, they are the 'value' series and the 'physical' series. The primary sources of the differing data types are:

Quantitative - value series;

* Central Statistical Services, Pretoria
* The South Africa Reserve Bank.

Quantitative - physical series;

* Department of Statistical Services, Pretoria
* Manufacturer bodies such as - South African Cement Producers Association
* Bureau for Economic Research, University of Stellenbosch.

Qualitative data;

* Data derived from the response of participants in opinion surveys, the primary source being, The Bureau for Economic Research, University of Stellenbosch who produce the following data, on a quarterly basis;

  'Business confidence' for architects, contractors manufacturers and subcontractors.

  'Tendering competition' amongst contractors.

'Shortages of labour' amongst contractors.

'Inadequate material supplies' amongst contractors.

Data from all of the above sources was evaluated by Martin (1981), his conclusions are contained in Chapter 4. Two of the figures within this text are based upon data from time series that he considered to be the most important.

(ii) Business cycle turning points

The turning points and other aspects of the business cycle are identified and recorded by economists at the South Africa Reserve Bank and published in the South African Reserve Bank Quarterly Bulletins. All of the graphs used in this dissertation will use this data as background, in the form of shaded areas which will represent the upswing phases and blank areas, which represent the recession phases. In this way we will identify the turning points, which are important for measurement.

(iii) Two new time series sources

In order to find quantitative data that would allow measurement of the effects of the business cycle on the demand for construction and the degree of competition amongst contractors, a new source was sought and eventually two were found.

Cape Peninsula Master Builders Association (MBA)

The first new source to be located was the tendering records of the Cape Peninsula MBA, an employer organisation that represents Master Builders in the Cape Peninsula

area. The information consists of tender results which are provided by members each time a tender is submitted. It therefore is a source of those tenders in which MBA members were involved and is relevant to the Cape Peninsula only. Whilst the limited range is a disadvantage, the fact that it is for those tenders in which MBA members participate will ensure that it is within the size range of this dissertation, i.e., medium to large contractors. It is a source previously untried. The data has been consistently recorded over a number of years. (It is likely that similar data could be obtained from other MBA's for further research in this area)

The data was contained in A4 size diaries which had been maintained by the secretarial assistants to the director. Mr Loy, the Director, gave permission for the diaries to be accessed, and the information was captured into a P.C. database using the Lotus 123 programme. The data was consolidated and smoothed by the use of a four month moving average technique. Further, because of the phenomenon of the annual builders holiday which occurs each December/January, and which effectively takes one whole month of production away from the industry, these two months were combined into one. The types of tender, 'open' and 'closed' were not recorded separately, therefore, the method used for calculating the number of bidders for a specific period, the average, will be influenced in a conservative manner. That is to say, a feature of closed bidding is the small number of bidders for each project. This will have brought the average down. See appendix 'D' for raw data.

<u>The Building Cost Index (BCI) survey conducted by the Bureau for Economic Research (BER)</u>.

Dr Stuart, the director of the BER gave permission for the data to be used and Mrs. Segalla assisted the author by providing access and advice concerning its extraction. It would appear that the early years of the survey have been lost but information dating from 1983, which is when the system became P.C. based, until the present time is available. The BCI is maintained by using the quarterly survey forms submitted by quantity surveying practices throughout South Africa. It contains details of successful

tenders for the building projects which the respondents have been responsible for during the period concerned. This information has been captured into a Personal Computer (PC) database using a programme written in Quick Basic, which is known as the BCI Programme. Data from this source is presented in this dissertation without smoothing or Xmas adjustments.

(iv) Building Economists

Part one of this dissertation is concerned with the business cycle and its effect on the industry, the realm of the building economist. In addition to the assistance given by Mrs. Segalla, Information was provided by Dr. Charles Martin at the Building Industries Federation of South Africa (BIFSA) and Mr Johan Snyman of Medium Term Forecasting Associates.

2.2.2 DEMAND FLUCTUATION EFFECTS

It may be argued that the effects of demand fluctuations on construction companies are obvious or well known. However, if this was the true, one would expect to find some documentary evidence and measurement but non was found and the task was made more difficult by this fact and, as a result, several unorthodox sources have been used.

(i) Newspaper and periodical items

Because of the lack of research into the effects of the building cycle there are few sources of data from which to draw. However, many references were found in newspapers, less formal building periodicals and company annual reports. These have been used in many instances because they are the views of senior managers in the construction industry and the only written record of certain effects.

(ii) Technical and statistical references

The statistical yearbook of the Building Industry Federation of South Africa (BIFSA) and the Chartered Institute of Building (CIOB) technical paper series provided most of the information in this area but other sources are described in the review of related literature and the reference bibliography.

2.2.3 CONSTRUCTION SALES DATA

To meet the requirements of Part two of this dissertation, information is needed to show the following:

The types of building procurement systems in use.

The usage of each system over a number of years.

The author conducted a search and discovered that there was no published data available in South Africa on these topics, nor was there any record of other research conducted in this area.

The search was first directed at BIFSA and the MBA's but the tender results data which they collect has not been extended to include the selection system which was used. Two methods of finding the data were then considered:

1) survey by questionnaire.

2) survey by interviews.

Since this dissertation is concerned with building procurement systems from the contractors point of view, the original idea was to obtain the data from contractors' and because of the time and distance constraints, the interview method was discarded

in favour of the questionnaire method. However, when the BCI data source was discovered the value of the quantity surveyors' possible contribution was considered and found to be suitable. In order to ensure full coverage from all parties who are most often involved in the contractor selection system, only the architects' point of view was now needed. This was obtained via the national survey described below.

Three main sources of survey data are referred to in this dissertation, they are:

THE WESTERN CAPE SURVEY	- September 1989
THE NATIONAL SURVEY	- July 1991
THE BER BCI SURVEYS	- quarterly 1983 to 1990

(i) Western Cape Survey

The survey was designed to identify change and trends in the methods by which contractors find work. A secondary purpose was to measure change over a number of years but particularly through the recession of 1984/86.

Contractors who could be described as 'large' or 'medium', in terms of turnover, R2m to R100m (1989), were targeted. Forty one were identified, who trade in the Western Cape and questionnaires were sent to all of them. Sixteen completed questionnaires were returned, two companies had ceased to trade and of the six largest companies in the Cape, only one responded, the others indicated that the information was sensitive and confidential.

The response: 41 - 2 = 39 possible. 16 completed = 41% which is a good, representative sample.

See appendix 'A' for a copy of the questionnaire and Figure 7.5 for the findings.

(ii) National survey of architects and quantity surveyors

This survey was a combined one. A number of undergraduate students under the supervision of Professor Bowen designed a large questionnaire and they kindly allowed me to include two questions because the topic was closely related to that which they were pursuing.

The target of the survey were, all of the registered architecture and quantity surveying practices in South Africa.

Architectural practices:

1115 Registered architectural practices were identified and questionnaires were sent to them. It was found that:

49	had been disbanded
7	questionnaires were 'returned to sender'
28	were found to be 'not applicable'
90	said that they did not receive the questionnaire
174	Total

99 completed and returned, which represents 8.88% or 10.5% after adjustment.

Quantity surveying practices:

496 Registered quantity surveying practices were identified and questionnaires sent to them. It was found that:

2	ceased to practice
2	returned to sender
24	not applicable

25 did not receive one

53 Total

99 were completed and returned. This represents a response of 19.86% or 22.3% after adjustment.

A copy of the questionnaire is contained in appendix 'B'
The findings are contained in Figure 7.6.

(iii) The BER Building Cost Index survey.

This survey is conducted by Ursula Segalla at the BER in order to maintain the quarterly BCI. The data has never been used or published in this format or context before, and it appears to be an important source because it is the only time series, which has recorded contractor selection methods and tenders accepted on a national basis.

The BER send out questionnaires to all quantity surveying practices each quarter and they maintain a response rate of 18 to 20%.

A copy of the data which were extracted is contained in appendix 'C' and the findings are to be found in Chapters four and seven.

2.3 RELATED LITERATURE

A through search of potential sources of related information in the form of research projects, papers, periodical articles and monographs has been undertaken. Very little was found that is close to the main theme of this research project and as a

consequence, much wider reading was necessary in order to find aspects of information that could be used to support or disprove the hypotheses.

The emphasis is on South African literature but a great deal of that which has been used is British, with American, Australian and other sources in support. Full details will be found in the two reviews, separated because of the widely differing topics. See Chapters three and six. A list of the key words used in the search are listed here:

Bidding Strategy
Building Procurement Systems
Business cycles
Construction demand
Construction cycle
Contract Procurement
Competitive Bidding
Competitive Strategy
Marketing Construction
Tendering
Tendering Strategy

PART ONE

THE BUSINESS CYCLE AND ITS EFFECT ON THE BUILDING INDUSTRY

CHAPTERS 3, 4 AND 5

CHAPTER 3

BUSINESS CYCLES: REVIEW OF RELATED LITERATURE

KEY WORDS

Business Cycles

Building Cycles

Demand cycle

Forecasting Building Activity

This chapter has been included to establish a contextual background and to indicate the various theoretical standpoints of others who have conducted research in this field.

3.1 INTRODUCTION

Perhaps it is because cyclical fluctuations in the volume of construction work are taken to be a fact of life in the industry that it has been left to the economists to investigate, comment and question these effects. That fluctuations in demand are an accepted fact is demonstrated in statements made by senior managers of construction companies recorded in statements to the press and in annual financial reports. One such report, produced by LTA Limited and published in July 1991, contained the following view which is expressed by the Chairman, Mr. H K Davies;

> *During the current economic downturn, the construction industry is again reacting in its traditional manner. By that I mean that work is being taken at minimal margins and sometimes below cost, merely to maintain turnover.*

In a publication entitled "The Construction Industry" the World Bank (1984) described the construction industry, thus:

> *Demand is subject to considerable fluctuations which can have serious repercussions on the utilisation of resources. (and further) The output of construction fluctuates considerably more than that of manufacturing and the economy as a whole. This tendency is inherent in the demand structure of capital goods industries where relatively small changes in demand by consumers will cause the production capacity to be expanded or contracted at a considerably higher rate. Not only do the private sector resources and demand fluctuate with export earnings, but important public sector investments also tend to concentrate during periods of rapid economic growth, thereby accentuating the cyclical variations. The fluctuations tend to be greater in developing than in developed countries.*

If you then add to this, the findings of Edmonds and Miles (1984), that the construction industry is often used as an economic regulator by Governments, it is little wonder that it is often said that one of the chief characteristics of the construction industry is the severity of the fluctuations in demand that are experienced. NEDO (1978). Hillebrandt (1984).

These fluctuations in the volume of construction work usually follow the pattern of the 'Short Term Business Cycle', though, they are usually more erratic and have a delayed response to recession because of the length of the construction process.

3.2 CONTROVERSY

That construction is more volatile than other sectors in terms of demand fluctuation would seem to be the generally accepted point of view, supported by NEDO (1978), Hillebrandt (1984), Edmonds and Miles (1984), and Newcombe *et al* (1990) all of whom agree that the situation is exacerbated by the fact that the construction industry is often used as an economic regulator by Governments. Certainly this has been the battle cry of industry lobbyists for decades, in their attempts to get governments to

invest in construction during downswing phases of the economy. In the UK numerous studies and reports have been produced in an attempt to influence government spending, these include; Emmerson (1962), Campbell, Bloom and Groome (1976) and Hillebrandt (1978). In South Africa, Kilian (1976) was commissioned by the Building and Construction Advisory Council to produce a report which was intended to influence the Government in contracyclical investment. The report was entitled "On Stabilising Construction".

However, British author Michael Ball (1988) in his book entitled "Rebuilding Construction" (pp.98-113.) has questioned the belief that construction demand is peculiarly volatile, he has stated that it is not true for Britain, at least at the aggregate national level. He quoted the research findings of Sugden (1980), who calculated coefficients of variation around output trends for construction and manufacturing from 1900 to the 1970's, and whilst great variation was found from 1901-15, the period following that showed equal variation whilst in the period 1950-71 the coefficient of variation for construction was less than that of manufacturing. Sugden concluded that:

> *...these figures give no support to the contention that the construction industry suffers unduly from fluctuations of demand. Rather they demonstrate that it has benefited relatively more than others from post war Keynesian policies. This is not to say that construction demand is not cyclical, merely that the demand for the products of most industries is cyclical, so unique features of construction industry structure and performance cannot be explained in these terms. (Sugden, 1980, p.3)*

Commenting on the theory that governments use the industry as an economic regulator, Ball is of the opinion that it is more a factor of the way that the industry is geared to cope with fluctuations that has caused governments to use it, rather than the converse.

3.3 THE SEARCH FOR A CONSTRUCTION CYCLE

3.3.1 CUSTOMER DEMAND

The demand for construction is similar to the demand for all other goods and services, a requirement for which a customer is willing to pay. Kilian (1976) stated that construction is largely a derived demand, in that the demand for a factory will depend to a large extent on the demand for the goods to be manufactured. He also described three sources from which demand for construction would emanate;

(1) owner users
(2) speculators
(3) landlords

Hillebrandt (1984) devoted much attention to the demand for construction, which she believed to be extremely complex, and she listed five major requirements that must be favourable before demand can be created:

(a) that there is a user or potential user for the building in the short or long term
(b) that some person or organisation is prepared to own the building or works
(c) that a person or organisation is prepared to provide finance
(d) that a person or organisation is prepared to initiate the process
(e) that the environment in which items (a)-(d) operate, are favourable.

She also lists the factors that create the environment described above, most important amongst them is the general level of the economy, measurable in terms of the business cycle.

Campbell (1974) also described the factors that influence demand and listed them as follows:

For the private sector -

(a) availability of bond finance

(b) credit availability

(c) business cycle

(d) changes in controls and grants.

For the public sector -

(a) Government measures to alter the level of activity in construction

(b) changes in Government policy regarding priority areas.

3.3.2 A CONSTRUCTION CYCLE

Dauten and Valentine (1978) recognised that construction is subject to regular cyclical movements which have often been more severe and have not always coincided with business cycles. Because of these two factors they recognised the construction cycle and they treated it as a separate cycle.

3.4 BUILDING CYCLES

3.4.1 MEDIUM TERM (KUZNETS) BUILDING CYCLES

Medium term cycles in construction have been identified and commented upon by American and British researchers, including, Long (1940), Abramowitz (1964), Parry Lewis (1965) and Gottlieb (1976).

In South Africa, Kilian and Snyman (1984) found evidence of a medium term cycle, Kuznets cycle, and whilst they were not able to prove the existence of the long, Kondratieff cycle, they suspect that it may exist. Green (1989) confirmed the existence of the Kuznets cycle in South Africa as did Cloete (1990). Cloete noted that the business cycle can be affected by the longer building cycle because of the importance and size of the industry to the national economy. In his words;

> *.... business cycle upswings which coincide with an expansion in building activity tend to be relatively strong and prolonged, while those occurring during periods when building activity is declining tend to be relatively short and anaemic. Similarly, business cycle downswings occurring when building activity is contracting tend to be relatively severe and prolonged, whilst those coinciding with the expansion phase of the building cycle tend to be relatively short and mild. Because the building cycle in the South African economy normally covers roughly two full business cycles, every second peak and trough of the business cycle tend to coincide with a peak and trough of the building cycle, which results in these peaks and troughs being more accentuated than usual.*

3.4.2 SHORT TERM BUILDING CYCLES

One of the earliest forecasters of construction activity in South Africa, Stewart (1965) did so by linking the value of building plans passed for construction, to the value of Reserves held by the Government. He noted that:

> *... when the Reserves are plentiful interest rates are low and building loans are easily obtained and when the Reserves fall the converse applies.*

His findings were confined to private sector construction only, and he found evidence of a delayed reaction, where, the value of building plans passed reached a peak one year after a peak in the reserves and that it fell to a low point one year later than a low point in the Reserves. Further, that the value of buildings completed, follows the same pattern, but the fluctuations lagged by another year. This information would seem to

imply a direct relationship between the business cycle and construction activity, since, there would seem to be a relationship between the business cycle and the level of foreign reserves. Gerhard de Kock,(1975) described the linkage between the two as a typical characteristic of the South African business cycle; reserves being high at the 'trough' of the cycle and usually show a pronounced downward tendency during the later stages of the 'recovery phase'. This correlation was clearly shown by Martin, (1981 p.128.)

Kilian (1976) conducted research into the measurement of construction activity and time series data in an attempt to identify construction cycles. He came to the conclusion that it was not possible to do this accurately with the statistical information that was available, ie. 'Building Plans Passed' and 'Buildings completed' both of which are confined to the private sector only and have other major shortcomings. He pointed out that, in plotting these data against a chart marked with the periods of recessions and recovery, no clear pattern of 'lead' and 'lag' could be discerned, possibly as a result of government attempts at regulation, though, it was clear that in long recovery periods 'public sector' work intensified dramatically after a lag of approximately one year but, no definite relationship to a period of recession could be found, possibly because of the size and duration of such projects.

De Wit and Moir (1983) suggested a method by which the time series, Building Plans Passed, could be modified in a way that would make the data more accurate.

Martin (1981) investigated further and provided an excellent analysis of the available time series whilst concluding that certain of them could be useful as a basis upon which forecasts could be made. These were:

Building Plans Passed	- Department of Statistics
Buildings Completed	- Department of Statistics
Building Loans Granted	- Association of Building Societies

Foreign Reserves - South African Reserve Bank

One of his recommendations was that a new time series be compiled, entitled 'Housing Starts', and Central Statistical Services, Pretoria has been recording them since 1987. In years to come this information will be most useful.
Martin showed that, by using a combination of these time series for the industry as a whole, and for various sectors where this is possible, definite patterns of behaviour and correlation with the business cycle could be found.

Further research, towards accurate identification of construction cycles in South Africa is being carried out currently by G.J.J. Snyman who has written numerous papers on other aspects of the effect of the business cycles, some of which will be discussed in this dissertation.

3.5 BUILDING SUBSECTOR CYCLES

That separate cycles exist for different sectors of construction, ie. Total Building, Residential, Non-residential and Alterations, was discovered many years ago and commented on by Newman (1935) and Long (1940).

The residential sector has attracted the most attention because it represents a large part of the total output of construction and has a variety of data that can be used to identify correlation and trends (Guttentag (1961), Maisal (1963), Grebler and Burns (1982))

In a book concerning the Canadian construction industry, Lange and Mills (1979), in a chapter by Kenneth T. Rosen, concerned with fluctuations in residential construction, noted that;

> *Housing appears to be a leading indicator of general economic activity because of its greater sensitivity to monetary policy changes, preceding slow downs and booms by several quarters.*

Research into the possibility of subsector variations being out of phase, and therefore compensatory, was conducted by Tan (1989) for Singapore and by Colean and Newcomb (1952) for the U.S.A., and they concluded that whilst some compensatory effects could be found, they were not sufficient to prevent long periods of low and high activity from affecting all subsectors. However, they appear to have ignored the 'Repair and Maintenance' sector, perhaps because it is usually considered to be too small a market for general contracting companies but several British companies did just that in the 1980's. Bloomfield (1988) stated;

> *The companies that are likely to be the ones best able to ride out the storm are those with a strong element of repair and maintenance in their armouries.*

3.6 GEOGRAPHIC INFLUENCE ON BUILDING CYCLES

References to this phenomenon are found in several sources but they are generally vague and few were found for construction specifically. Buckley & Enderwick (1989) stated:

> *Fluctuations in overall demand, and hence in output, are substantial in contracting and when output for a particular type of work in a specific geographical area is considered, the fluctuations may be very wide indeed.*

3.7 FORECASTING: USAGE AND TRENDS

Hillebrandt (1984) included a chapter on forecasting and forecasts of demand for construction, in which she states that some assumptions about the future are needed as a basis for almost any type of decision. She expands upon short and long term forecasts which are available in Britain, apparently though, not on a regular basis. This is the only reference to forecasting that the writer has found in any construction text book and may indicate that the construction industry is beginning to take it seriously, though less so than in South Africa at present where several sources of forecasting are available, including medium term which is generally understood to be the period which is most difficult to forecast.

An Australian, Hutcheson (1990), presented a paper at the CIB conference entitled, "Forecasting the Building Market" in which he lists the agencies which affect demand for building. In his list he includes, world economic cycles and consumer confidence but he has not identified the business cycle specifically and the work is rather 'shallow'. At the same conference a paper was presented by Merkies and Poot (1990) who reviewed the short-term forecasting methods used in New Zealand and the Netherlands.

Whilst the state of the art has been shown to leave much to be desired, several building economists offer a service to fee paying clients in South Africa. They analyze the business cycle, pinpoint the current stage and forecast its future direction and effects on various sub sectors of the construction industry.
These include:

* The BER who produce a quarterly survey for the building industry and a confidential report for the Association of Quantity Surveyors entitled "Trends in Building Costs".

* Medium-Term Forecasting Associates, who produce specific reports for private clients, and detailed medium-term (five year) forecasts such as "CPAP, BER Building Cost Index" and P0153 Index Forecasts, and "Biannual Report on Home Building Conditions" for the National Association of Home Builders (NAHB).

* Econstat.

All of them analyze and provide interpretation of the data for their readers or clients. Some of the data set out in the following pages has been provided by these sources.

In addition to this service provided by construction economists, commentary and analysis can be found in a number of construction journals:

* Dr Gad Ariovich who has a regular column in the, bi-monthly, official journal of FASSA, "The Sub Contractor", entitled "Outlook for the building industry" in which he gives a short term forecast based upon various leading indicators, such as the BER Building Cost Index, the Department of Statistical Services series, Building Plans Passed, Buildings Completed and changes in cement production.

* Dr Charles Martin is the building economist for BIFSA and, from time to time, he provides an analysis of the state of the industry and a forecast of the future in the 'S A Builder'.

3.8 THE EFFECTS OF THE BUSINESS CYCLE

Most of the acknowledged experts in construction economics who have published text books, comment on the extent of construction industry fluctuations and their effect, but they seem to go no further than commenting on the effect on turnover.

Patricia Hillebrandt merely comments on the actions of the British construction industry and its attempts to persuade the Government, the single largest client, to take steps to reduce the level of fluctuation. She also advised the industry to accept that it must live with an uncertain fluctuating work-load and to plan its actions accordingly.

Kenneth Rosen in Lange and Mills (1979), commenting on the American residential sector of construction, stated that the periodic cyclical declines account for as much as 25 percent loss of production and unemployment in the building industry as well as affecting a number of related industries.

NEDO (1978) in a publication entitled "How Flexible is Construction" seem to have structured the document around methods of influencing the British Government to take steps to reduce the severity of the fluctuations.

In South Africa too, the emphasis has been placed on influencing Government. This is evidenced in Kilian (1976), "On Stabilising Construction", a report which was commissioned by BIFSA and the Department of Public Works.

The BER has however, pioneered work which has provided researchers with an insight into the effects of business cycles upon construction companies. The importance of the work of the BER can be found in the fact that virtually all of the building economists in South Africa have worked for the Bureau at some time in their career and that most of the research in this field has been produced by them.

Two of these building economists produced papers which dealt with certain aspects of the BER 'Building Cost Index'. Kilian (1980) referred to the fact that the cost of building is affected by the phases of the business cycle. He observed that costs soar in the growth, or recovery phase, and slow-down in the recessionary phase, following the cycle closely. Snyman (1989)b provided a more detailed analysis which confirmed Kilians' findings and is dealt with in Chapter Five.

Whilst reference is made here, to tender prices no reference can be found concerning levels of profitability, other than the annual financial reports of public companies and general comments made by various construction company executives to the press. (several quotes in Chapter 5)

The effects of a recession appear to be favoured more than those of an upturn, in terms of documentation, but Langford (1982) indicated that one of the of the reasons for the creation of Direct Labour Organisations in the U.K., was to be found in that many people perceived that contractors tended to overcharge for their services during a prolonged recovery period.

Campbell (1974), in a paper concerned with the management of construction demand in the U.K., listed the effects of fluctuations upon efficiency and categorised them as follows:

(1) Effects of the downturn:
   (a) High unemployment and reduced earnings for operatives, professionals and managers.
   (b) Outflow of skilled people, many of whom never return.
   (c) Excess material stocks.
   (d) Excess production capacity, contractors, and suppliers.
   (e) Margins reduced below economic levels.
   (f) Increasing bankruptcies and liquidations.

(2) Effects during upturn:
   (a) Shortage of human resources.
   (b) Pressure on design team leads to poor and incomplete documentation and detail.
   (c) Shortages of materials.
   (d) Rapid increase in tender prices.

(e) Rapid increase in earnings of employees.

(f) Growth in self employment.

(g) Award of public sector contracts postponed or delayed; due to bids being higher than estimates of cost.

(3) Effects of fluctuations - general.

(a) Lower level of investment If prices are not easily raised during peak periods to compensate for periods of excess capacity.

(b) Greater reliance on peak load plants rather than more efficient, large scale plants.

(c) Lower level of training.
No incentive to train in downturn. Upturn, too busy to train. Self employment discourages training.

(d) Impermanence of work teams.

(e) Undue interest in areas of possible windfall profits.

Thanhiain and Wilemon (1981) described the effect of the business environment on pricing, their summaries contained in **Table 3.1.**

TABLE 3.1 THE EFFECTS OF THE BUSINESS ENVIRONMENT ON THE PRICING OF CONSTRUCTION WORK.
Source, Thanhiain and Wilemon (1981).

ELEMENT	ECONOMY GOOD	ECONOMY POOR
COMPETITION	WEAK	STRONG
CUSTOMER BUDGETS	FLEXIBLE	HIGH
COST ESTIMATE	BELOW BUDGET	ABOVE BUDGET
RISK	LOW	HIGH
DESIRE TO WIN	WEAK	STRONG

Lansley and Quince (1981) conducted research into the response of contractors to a major recession in the British construction industry, where, demand for construction fell by nearly thirty percent, in the mid 1970's. Whilst some contracting firms maintained a high workload the majority were forced to choose from three courses of action:

(1) Enter new markets or to undertake new types and sizes of project, possibly in new locations.

(2) Increase efficiency in order to exploit existing markets more intensively.

(3) Allow their business to shrink.

Wakefield (1983) writing about the same severe recession, stated that:

> *...the market for buildings is no longer dictated by need but by choice. Builders must create their own demand and go out and seek work and new markets.*

South (1979) undertook an in-depth study into the effects of demand fluctuations and, whilst much of his work was inconclusive, he did list a number of factors which he believed, companies could be expected to find and must adapt to, as a result of changes in demand, as follows:

IN HIGH DEMAND	IN LOW DEMAND
Scarce Labour	Labour available
Poor progress	Good progress
Profits increased	Profits reduced
Specialists scarce	Specialists plentiful
Material shortages	Material plentiful

South went on to show that companies responded by their:

Employee and subcontracting policy;

Work type by sector;

Geographical range of work;

Tendering.

3.9 CONCLUSIONS

It would appear that construction cycles have been subjected to the attention of a number of researchers in South Africa in recent years. However, they all seem to be of the opinion that more accurate data are required before forecasters can be confident about their predictions. Research is continuing, however, and two specific areas would seem to enjoy most attention; the 'demand for construction' and 'sub-sector cycles'.

The effects of fluctuations in the level of demand for construction have not been subject to the same intensity of research activity, indeed, there would seem to be a great need for more research in this area.

CHAPTER FOUR

THE BUSINESS CYCLE AND THE DEMAND FOR CONSTRUCTION

> *All forms of forecasting must always be coupled to the occurrence of events in the past and the likelihood of them happening again. Any flashes of insight or revelations from celestial sources should remain the business of the prophets, astrologers, witchdoctors and necromancers. It is by studying the past with the intention of predicting the future that the forecaster gains an insight into the present.*
> Kilian and Snyman (1979)

In this chapter sub-problem No 1 will be investigated:

Is it possible to predict future changes in the level of demand for construction work in the market place ?

4.1 DEFINITION OF BUSINESS CYCLES.

According to the definition of Burns and Mitchell (1946),

> *Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organise their work mainly in business enterprises: a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions (in absolute terms), and revivals which merge into the expansion phase of the next cycle; this sequence of changes is recurrent but not periodic in duration, business cycles vary from more than one year to ten or twelve years.*

This time period is found in the USA and is typical of developed countries. In South Africa a much shorter duration of cycle is found; from more than one year to six years, and this is typical of undeveloped countries. See Smit and van der Walt (1982). A much more graphic explanation is given by Snyman (1989)a, who described four phases of the business cycle, these are the upswing or recovery phase, followed by the peak, the downswing or recessionary phase and the trough. These phases are indicated in **Table 4.1,** which is adapted from his article.

Several types of business cycle have been identified and these can be described in terms of their average duration, measured from peak to peak. These cycles have been given the name of the person who first identified them. The more important ones are:

The Kitchin cycle: less than 1 to 12 years: short term.

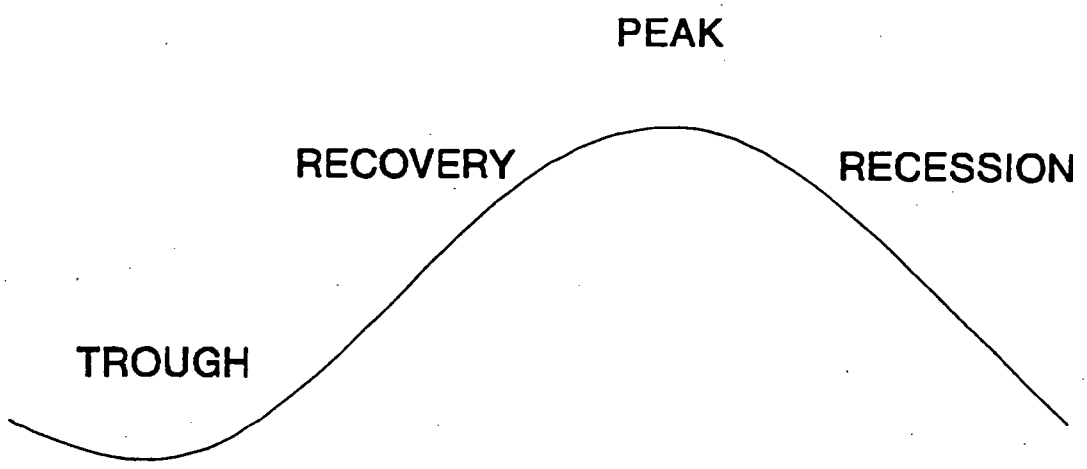
The Kuznets cycle: 15 to 25 years: medium term.

The Kodratieff cycle: 50 to 55 years: long term.

However, this dissertation is concerned only with the short term business cycle which will be referred to as the 'business cycle'.

The phases of the cycle are sometimes more pronounced than at other times. This is described as the amplitude of the cycle and is a measure of the depth of the trough and height of the peaks from the long term growth line. If a trough reflects an absolute decline, where two or more consecutive quarters have a GDP growth figure that is lower than the previous quarter, this is understood to be a recession. A trough need not arise because of an absolute decline, simply a reduction in growth, and its amplitude would be less than that previously described.

TABLE 4.1 THE BUSINESS CYCLE adapted from Snyman (1989)a



BUSINESS MOOD IS PESSIMISTIC	BUSINESS MOOD TURNING OPTIMISTIC	HIGH DEMAND	RAND UNDER PRESSURE
POLITICAL AND SOCIAL UNREST	PRODUCTION IMPROVING	HIGH USAGE OF PRODUCTION CAPACITY	MANUFACTURING PRODUCTION DECREASING
IMMIGRATION DOWN	LOW STOCK LEVELS	STOCK LEVELS RISING VOLUNTARILY	STOCK LEVELS RISING INVOLUNTARILY
	INTEREST RATES FALLING	LONG DELIVERY PERIODS	HIGHER INTEREST RATES
SURPLUS ON CURRENT ACCOUNT OF BALANCE OF PAYMENTS	LARGE SURPLUS CURRENT ACCOUNT	CURRENT ACCOUNT GOES DEFICIT	DEFICIT ON CURRENT ACCOUNT INCREASING
SHARE PRICES START TO RISE	RAND SHOULD APPRECIATE	SHARE PRICES LEVELLING	HIGH INFLATION
PROPERTY PRICES DOWN	INFLATION DROPPING	DISCOUNTS DISAPPEAR	HIGH PROPERTY PRICES
	BUILDING COSTS RISING		
BUILDING SOCIETY FUNDS INCREASING	BUILDING SOCIETY FLUSH WITH CASH	ALL PRICES RISING	PRIVATE DEMAND FOR CREDIT DROPPING

4.2 INTRODUCTION

It is clear from the Review of Related Literature, Chapter three, that construction economists are in agreement about one thing; the construction industry behaves in a way that differs from the aggregate of other businesses, to the extent that a separate cycle can be identified. However, attempts to identify this cycle have shown that at least two separate cycles exist, the medium term (Kuznets), and short term (Kitchin) cycles, but the latter is not easily identified because of:

1) The lack of reliable data, and
2) the fact that there are many different 'sectors' of the construction industry which behave in ways that are different.

4.2.1 THE LACK OF RELIABLE TIME SERIES DATA IN S.A.

This subject was dealt with by Kilian (1976) and later, in much more detail, by Martin (1981). Martin conducted a survey and evaluated the time series data, applicable to building activity, with special reference to their prognostic value. His research was intended to help in the identification of a comprehensive composite indicator of building activity, (civil engineering excluded) which could be used to identify the building cycle. He concluded by stating that the two main quantitative series, Building Plans Passed and Buildings Completed needed to made more reliable before they could be used in the manner envisaged. However, Martin did achieve a measure of success by combining and comparing different types of data and this is dealt with later.

Several economists use the time series, 'Building Plans Passed' and 'Buildings Completed' and after plotting the data, describe the results as 'The Building Cycle'. (this begs the question, what is the building cycle? The answer may be found in 4.2.3) However, the data have several inherent problems which are described in detail by Kilian and Martin, and the defects include problems associated with collection and those described below:

Building Plans Passed.

The value of building plans passed would seem to enjoy a degree of correlation with the business cycle but because, amongst other problems, the variable time period between plans passed and commencement of construction is not catered for, nor is the quantity of abandoned or postponed projects measurable, the cycle that is depicted cannot be construed as the 'building cycle'.

Buildings Completed.

When plotted against the business cycle, the resultant trend line indicates the time when projects were completed not when the work was carried out and since project durations can be five years or more in some cases, and no standard adjustment can be made, because projects do not have standard durations, the results are not constant. Therefore, this cannot be construed as the 'building cycle'.

It is clear that this lack of 'quantitative' data, together with the difficulty of making the necessary adjustments to them, has caused researchers to look to other methods and types of information. The Bureau for Economic Research, University of Stellenbosch, (BER) were the pioneers of building industry forecasting. The majority of building economists, referred to in this dissertation, were employed by the BER at some stage of their careers, including Kilian, Snyman and Martin. They identified this shortage of reliable data and decided to obtain data of a different type by surveying companies and professional practices in the construction industry, in order to obtain data that would assist them to determine the turning points of the cycle, or the demand for building. Whilst this data is classified as 'qualitative' data, they have achieved a measure of success, and the data obtained has become the most frequently used database for analyzing and forecasting trends in the construction industry, usually combined with other data. The BER produces a quarterly report in which they display data and provide an analysis of survey results which is obtained by surveying the opinions of contractors, subcontractors, manufacturers and merchants. From these

sources they publish the following types of information;

Business Mood.

Availability of Resources.

Degree of Competition in Tendering.

All of which is relevant to the second hypothesis and are dealt with in more detail in the next chapter.

4.2.2 THE INFLUENCE OF THE VARIOUS SECTORS

Other types of data are available, for example, the physical series, which comprises such items as 'brick stocks' and 'cement sales', but these are influenced by the civil engineering construction sector which is predominantly of an infrastructural nature, often strategic and, therefore, less susceptible to fluctuations than the other sectors.

There are numerous identifiable sectors in the construction industry, but the generally accepted principal sectors are listed in **Table 4.2** together with a measure of the factors which cause them to behave differently.

TABLE 4.2 SECTORS OF THE CONSTRUCTION INDUSTRY TYPICAL CUSTOMER AND PROJECT PROFILE

SECTOR	CUSTOMER TYPE	PROJECT SIZE	PROJECT DURATION
CIVIL ENGINEERING	GOVERNMENT	LARGE	LONG
GENERAL CONTRACTING	GOVT/ PRIVATE	MEDIUM	MEDIUM
HOUSING	GOVT/ PRIVATE	SMALL	SHORT
ALTERATIONS AND ADDITIONS	PRIVATE	MINOR	SHORT

The above table will facilitate an understanding of the factors that affect each sector and cause them to react to demand changes in differing ways:

a) private individuals react to economic change faster than private companies which, in turn, react faster than governments,

b) long term projects may span from one phase of a cycle to another, or from one complete cycle to another,

c) the size of a project may dictate the length of time that it will take to start it or to stop it.

In his book entitled 'Rebuilding Construction', Ball (1988) (pp. 101-104) describes the behavioural difference between these sectors, in Britain. He claims that public sector work can be interpreted in terms of long term trends, whereas the private sector exhibits more short-term variability. Ball believes that by reading these sectors together, one is blind to the changes of each, which are often compensatory.

4.2.3 THE CONSTRUCTION CYCLE AND THE BUILDING CYCLE

What is the construction cycle? What measure do we use to plot it? These are pertinent questions which should be made clear when such cycles are discussed. Obviously, the aggregate amount of construction in-progress at any particular time expressed in terms of the amounts of capital invested in all of the sectors of the industry, is the basis for the construction cycle. Only those sectors which are specifically 'building' are included in the building cycle but the timing or positioning of the measurement will influence the cycle greatly.

A cycle, when plotted as a line on a chart, has no depth or width, it is simply a point in time. However, construction projects are not just points in time, they have a life-span which may vary from a few months to several years. However the statisticians who collate the time series data, use the anticipated or actual total value of each project and this value is taken as a lump sum and included in the time series for one specific month depending on the point in time when the figure was calculated. If it is a figure based upon the estimate of cost at the time that the plans were approved by the local authority, the total sum would be included in the data listed for that particular month. Where then is the point in time that we call the 'building cycle', to be drawn ? Some time after the completion of a project which is offered by the time series 'buildings completed', or in the first third which is offered by 'tender results' and 'building plans passed'?

If one assumes that the contractor needs to be aware of the stage of the building cycle in order to decide upon a strategy for sales and estimating the 'mark-up' that the market might bear at that particular time, then the information that is required should indicate the turning points in the cycle as they affect demand or, at least, the point of sale not the end of projects or at the point of maximum expenditure on construction. **Figure 4.1** is used to demonstrate this argument.

In order for the available time series data to be of use to the end users of forecasts, ie. to determine when the level of demand will increase or decrease, adjustments need to be made to the data. The difficulties of determining a realistic time period can be reduced only if sectors are considered separately, in this way, projects where the variables, in terms of duration, client type and procurement method are minimised and standard adjustment factors can be calculated.

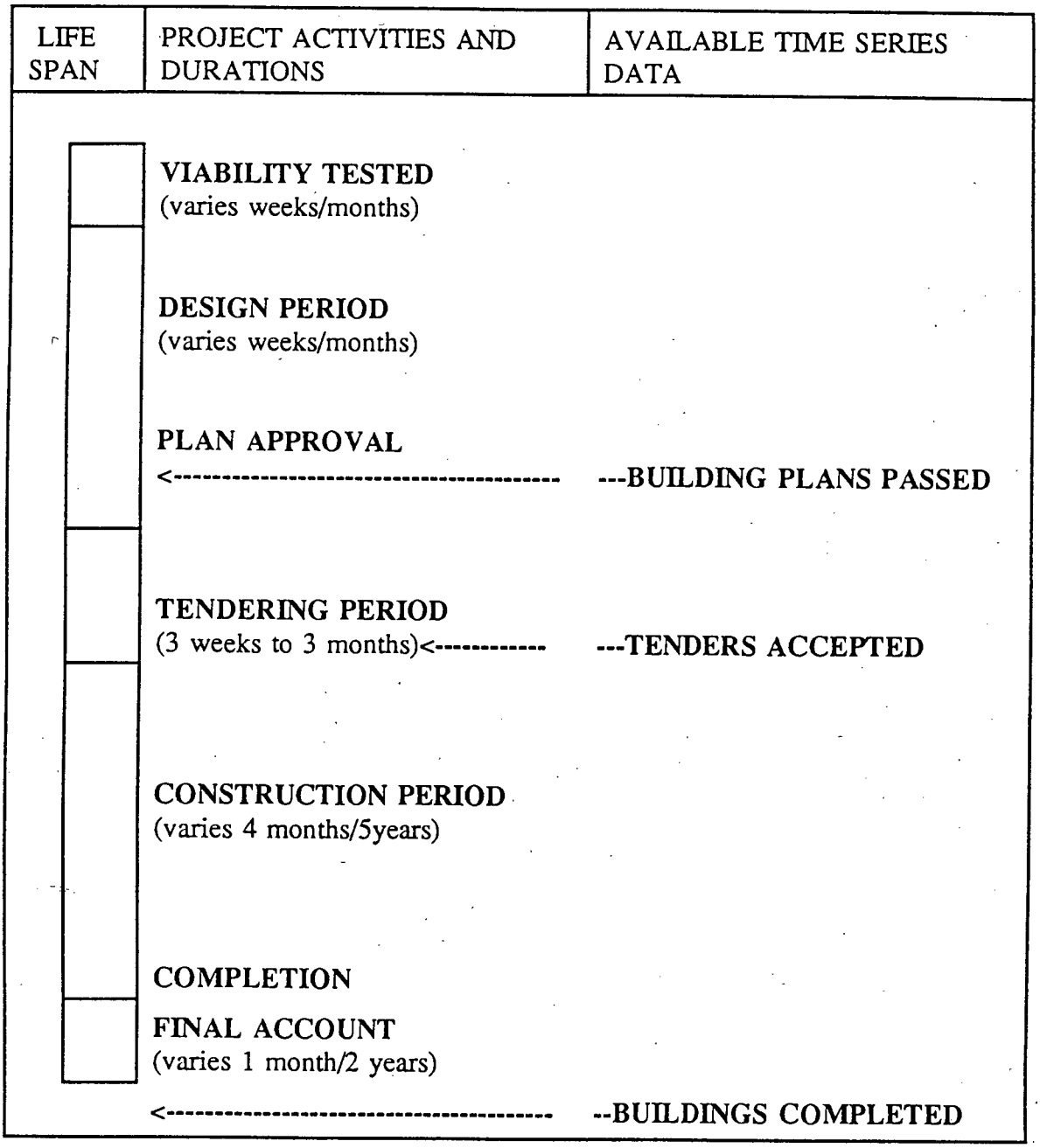


FIGURE 4.1 LIFECYCLE OF A TYPICAL CONSTRUCTION PROJECT AND THE POSITIONING OF TIME SERIES DATA

4.2.4 CONSTRUCTION SUB-SECTOR CYCLES

The findings of researchers in various parts of the world, including South Africa, have shown that separate short term cycles exist for civil engineering and for building,

which can be isolated further by taking sub-sectors such as the public sector and private, further divided into 'residential', 'industrial', 'commercial' and 'additions and alterations'. However, the public sector is often manipulated by government to influence the levels of economic activity and the cycles for work in this sector are likely to be distorted because of this.

At the present time the body of knowledge of sub-sector cycles in South Africa is limited to residential and non-residential building in the private sector and much more research is required in this field before definite conclusions about the behaviour of sub-sector cycles can be reached. Kilian (1976) p.186 stated:

> *As the need for better forecasting does exist, no effort, money or research should be spared to improve the medium term forecasting. In the case of construction forecasting the need for sectorial and regional breakdowns is apparent.*

However, even in it's present form, several building economists generate income by producing forecasts from the available data, for employer organisation members and a number of other fee paying customers. It is not within the scope of this dissertation to measure the effectiveness of such forecasts, but the fact that they have been in existence for a number of years would seem to indicate that the information which they produce is of some value to companies within the construction industry.

4.2.5 CONSTRUCTION DEMAND CYCLE

This dissertation is concerned with the methods which contractors use to make a sale based upon forecasts of the turning points of the business cycle. What the contractor is concerned with is the level of demand for construction. A more significant cycle, in terms of identifying the timing of changes in the need for the services or products of contractors, would seem to be 'the construction demand cycle'. Wells (1986) described continuity of demand as being more important to the construction industry

than other industries where stockpiling in times of low demand is practised.

The BER 'Business Confidence Indicator' is perhaps closer to a demand indicator than any of the quantitative time series that are available, since, it reflects the opinions of contractors about demand levels. The recent inclusion of architects and quantity surveyors in the BER surveys should provide a further indication of demand due to the fact that they are closer to the client than is the contractor.
These indicators can be seen in Figure 4.6 where a measure of the accuracy of the BER 'Business Mood' indicator is found by comparing it with quantitative data in the form of the 'number of tenders accepted'

4.3 ANALYSIS OF CURRENT TIME SERIES DATA WHICH IS USED FOR THE MEASUREMENT OF BUILDING CYCLES

Because no single composite indicator of building activity exists in South Africa at this time, (Snyman is conducting research into this area at present), researchers and economists must use a variety of data, from various sources, in order to find a 'close fit'.

In section 4.2.1 mention was made of the work done by Kilian (1976) in his comprehensive report entitled "On Stabilising Construction" (pp. 81 to 91.), where he listed the shortcomings of the time series data, related to building activity. Martin (1981) produced a more in-depth survey of the available time series data. He concluded his survey stating that there was a need for a comprehensive composite indicator of building activity but that the existing time series were of some value when adjustments were made, and should be seen as complimentary rather than obsolete when a composite indicator is found. Martin stated that certain of the time series were more important than others and a number of his examples have been used in the following text.

4.3.1 SOME OF THE MORE IMPORTANT TIME SERIES

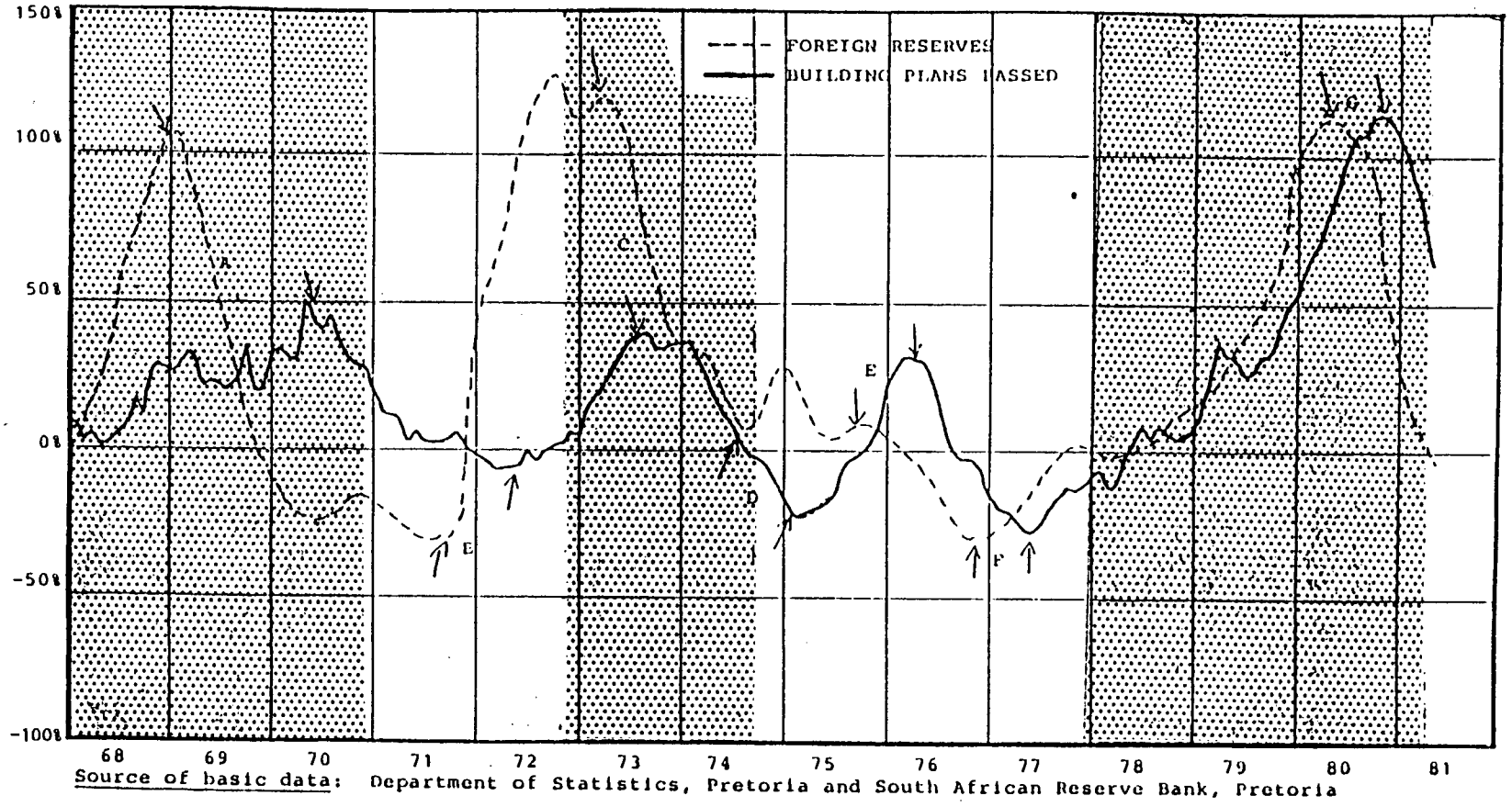
Martin described certain time series as 'more important' and he used them in combination after computing the data using a programme called BEWEEG which first, smoothed the data by means of a six month moving average, then the data for a particular month were compared with the corresponding month, twelve months earlier, and expressed as a percentage rate of change. The data that he considered as more important and which were treated as described were:

Building Plans Passed and Buildings Completed
Building Loans Granted and Building Plans Passed
Building Loans Granted and Residential Plans Passed
Building Loans Granted and Buildings Completed
Foreign Reserves and Building Loans Granted
Foreign Reserves and Building Plans Passed
Foreign Reserves and Buildings Completed

Whilst each of the data types contains inherent defects, certain relationships can be found that are of importance to the forecaster.

Figure 4.2 is a comparison between the six month moving average percentage rate of change of foreign reserves and total plans passed. It indicates correlation between the two whereby reserves lead the recovery phase by six to nine months and the recession phase by nine to fifteen months. By watching for the turning points in the foreign reserves one could predict a turning point in building activity. This confirms the findings of Stewart (1965).

Figure 4.3 is a comparison between the six month moving average percentage rate of change of total residential buildings passed and buildings completed. It indicates that Building Plans Passed for residential buildings is a leading indicator, in that it leads the turning points of the business cycle. It turns six to nine months before an upturn



Source of basic data: Department of Statistics, Pretoria and South African Reserve Bank, Pretoria

FIGURE 4.2 COMPARISON: 6 MONTH MOVING AVERAGE PERCENT RATE OF CHANGE OF FOREIGN RESERVES AND BUILDING PLANS Source Dr. Charles Martin

(Shaded areas are the growth phases of the business cycle)

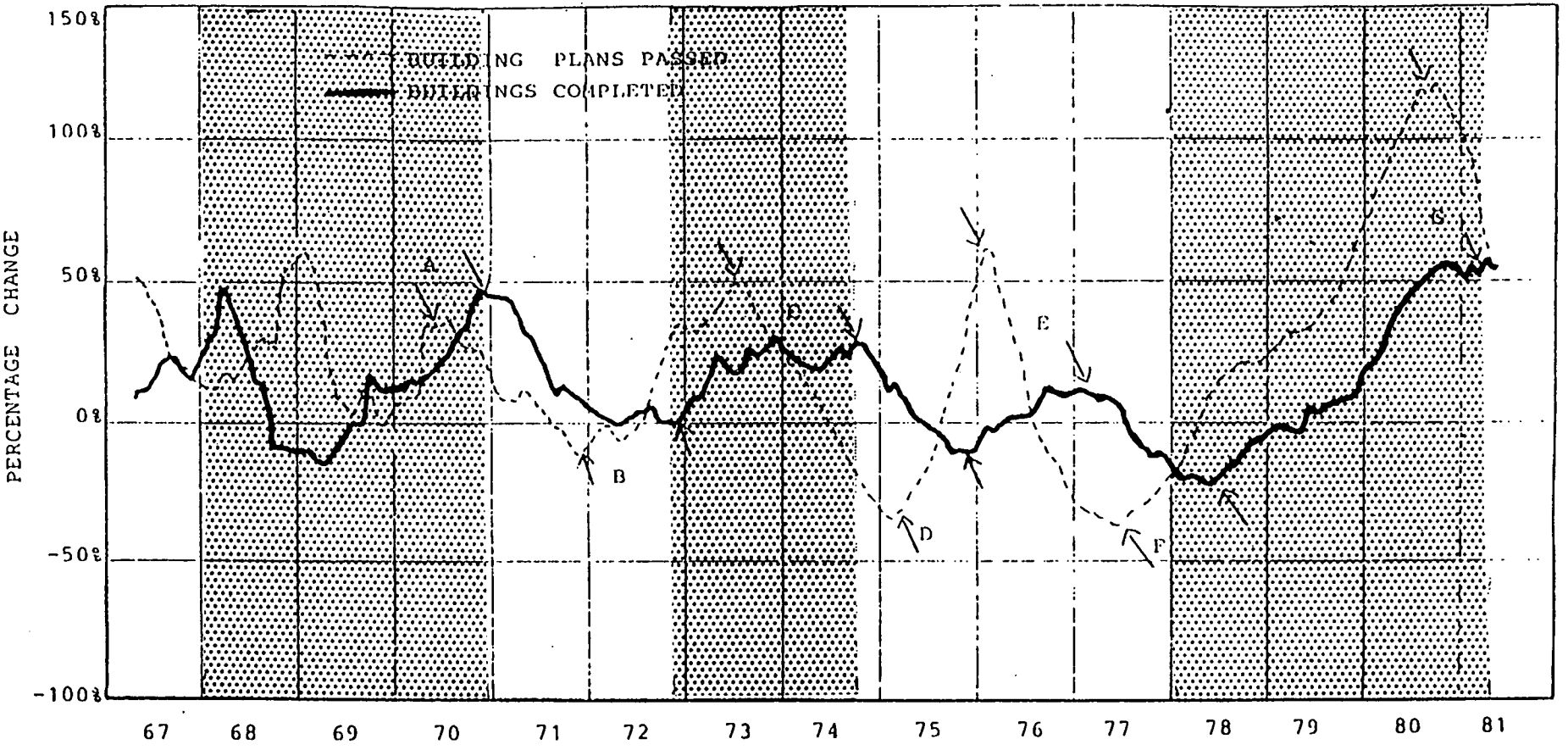


FIGURE 4.3 COMPARISON: 6 MONTH MOVING AVERAGE PERCENT RATE OF CHANGE OF TOTAL RESIDENTIAL BUILDING PLANS PASSED AND BUILDINGS COMPLETED
Source: Dr. Charles Martin
(Shaded areas are the growth phases of the business cycle)

and six to fourteen months before the recession. Also of note, is the correlation between the turning points of plans passed and buildings completed. Buildings completed lags by approximately twelve months at both turning points. The turning points of 'buildings completed' correlates very closely with the turning points in the business cycle.

4.3.2 TWO NEW SOURCES OF TIME SERIES DATA

During the search for data relative to Part two of this dissertation, two new types or sources of time series data were discovered. One in the form of the Cape Peninsula Master Builder's Association, (MBA) who had kept records of tender results over a period of many years. It is not a complete record of all of the tenders in the Cape peninsula through this period, only tenders in which MBA members participated, but they would seem to have been consistent in their collection policy and the data is a representative sample, at the very least. The data can be found in appendix 'A' and is summarised in **Figure 4.4**.

A second source of tendering data was discovered at the BER. The data are provided by quantity surveying practices that have submitted returns which are used to calculate the BCI and it dates back to 1983 only, but it is for South Africa as a whole and it has the advantage of being classified by sector. The data are presented raw, in that they are not smoothed or treated in any way. It may be criticised because it is based upon the number of contracts and not the value, but it does not suffer from the problem of inflation and it obviates the problems that extremely large contracts can cause by distorting the figures, e.g. The new Groote Schuur hospital was thirty times larger than the average contract value during the period when it was awarded. The number of tenders accepted are displayed in **Figure 4.5** and is similar to the tender data in that it is an activity that takes place soon after tenders are opened (usually within a period of three months) although tenders are sometimes called for and the project is shelved.

The following observations relate to figures 4.4 and 4.5:

* The demand for buildings and the business cycle behave in relation to each other. Demand is seen to increase in the growth phase and to recede in the recession phase.

* Demand for buildings must be a leading indicator, since, both Figures show that tender volume changes occur before the turning points. (BER late in 1986) This may be influenced by government intervention, see Figure 4.7.

* Seasonal variations are seen, particularly in the MBA data. This is probably due to the year end close down of the industry rather than of a reduction in demand.

* Both Figures show remarkable correlation during the period for which they overlap. However, the Cape data deviates in 1987 after both show an uncharacteristic reduction in demand early in a growth phase (could be seasonal) but the Cape continues for one quarter longer, before recovering. In the first quarter of 1988 the Cape data, again, shows a reduction in demand, whilst the national momentum is maintained.

In an attempt to test the data, it is compared with the BER business confidence index in **Figure 4.6**, where close correlation can be found between the two series and the business cycle. The business confidence indicators seem to turn at the same time as the number of contracts turn, in 1984 and 1986 but three months before in 1989, for the contractors and six months in the case of the architects. This could have been anticipated, given that architects are usually engaged by a client before a contractor is engaged. The influence of the government or public sector, can be seen if comparisons are made between the 'total tenders accepted' and the 'tenders accepted for each sector', which can be found in Figures 4.7 to 4.10, described next.

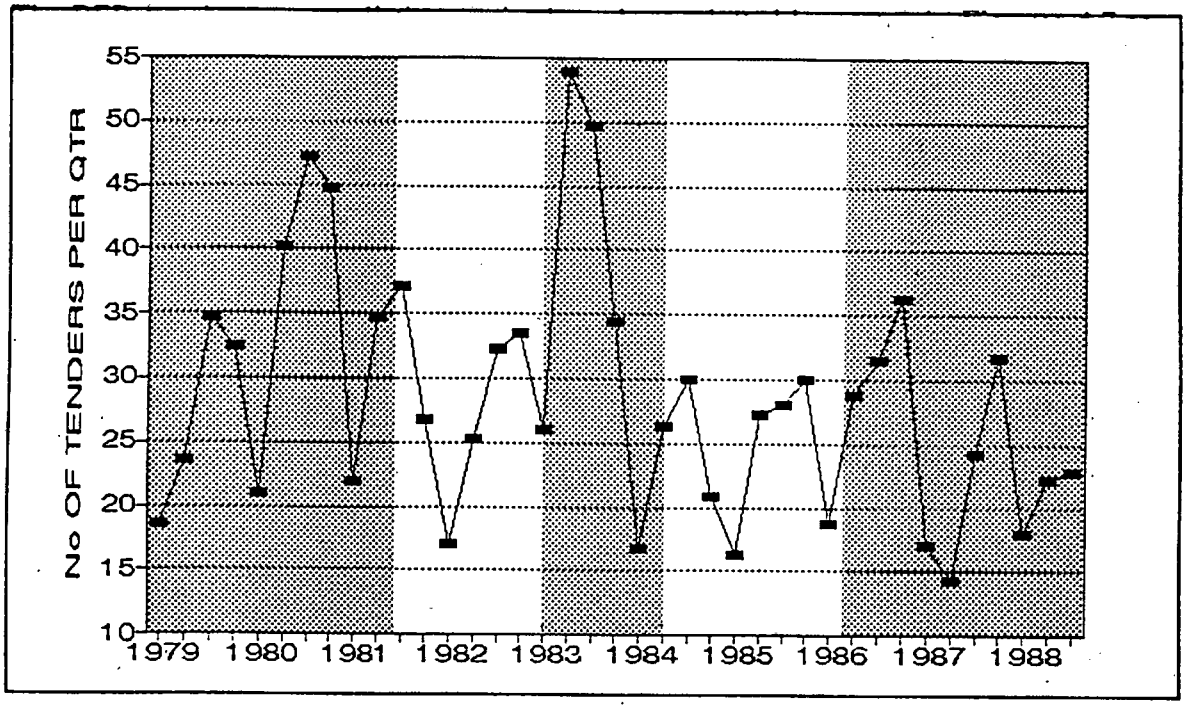


FIGURE 4.4 NUMBERS OF TENDERS IN THE CAPE PENINSULA REGION 1973/88 Source: Cape Peninsula MBA

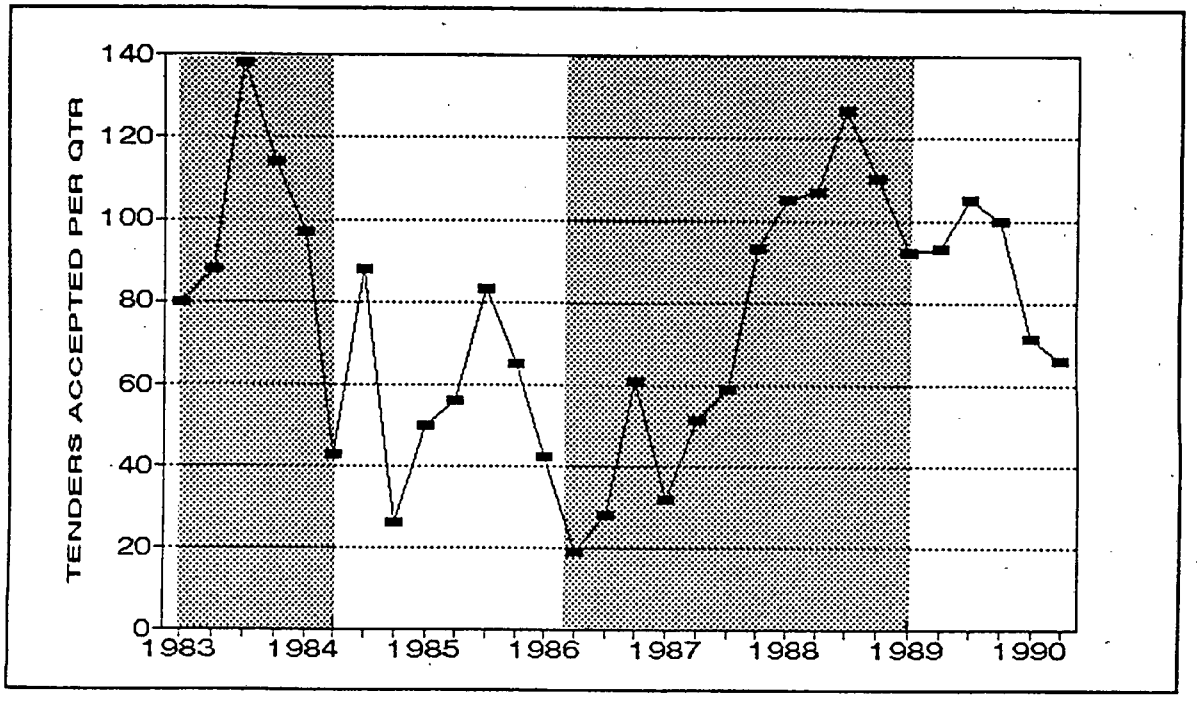


FIGURE 4.5 FREQUENCY OF TENDERS (WHOLE OF RSA) 1983/90
Source of data: BER BCI Contracts Awarded

The BER 'tenders accepted' time series have been plotted by sector in **Figures 4.7 to 4.10**, where the following observations were made:

* Government tenders accepted, Fig. 4.7, shows close correlation with the business cycle but after the growth phase, which has started one quarter after the business cycle turning point, the peak and fall-off begins nine months before the business cycle turning point in both growth phases. This could be an example of government intervention to slow the pace of the recovery phases.

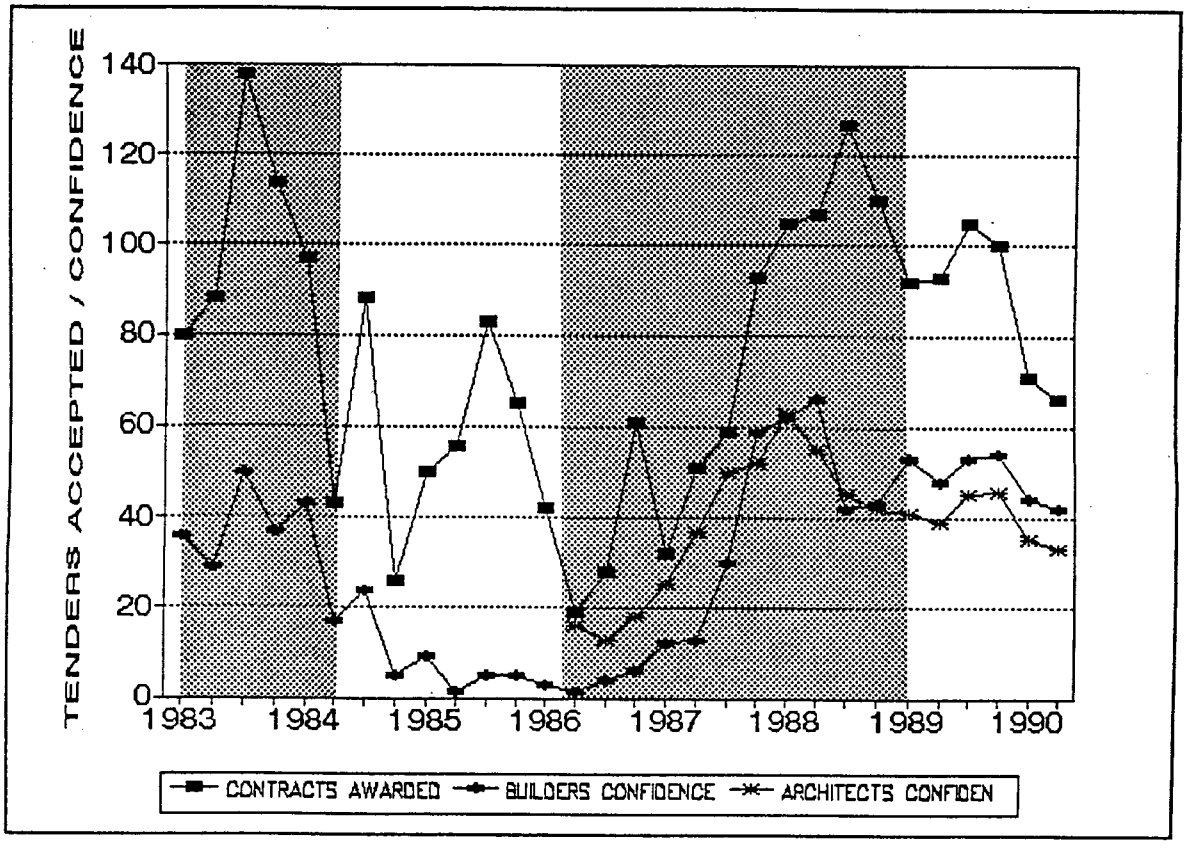


FIGURE 4.6 BUSINESS CONFIDENCE / TENDERS ACCEPTED 1983/90
Source of data: BER

* Housing tenders accepted, Fig. 4.8, also shows close fit with the business cycle but is lagging in one recession and leading in the other.

* Industrial tenders accepted, Fig. 4.9, demonstrates a cautious attitude with a delayed response to growth phase and is leading by three to six months at the upper turning points.

* Commercial tenders accepted, Fig. 4.10, shows only slight correlation with the business cycle. There are clear signs of continued growth in the recession phases, particularly during 1989/90, perhaps an indication of the major institutions pursuing a contra cycle investment plan or perhaps having nothing better to do with their surplus funds at those times.

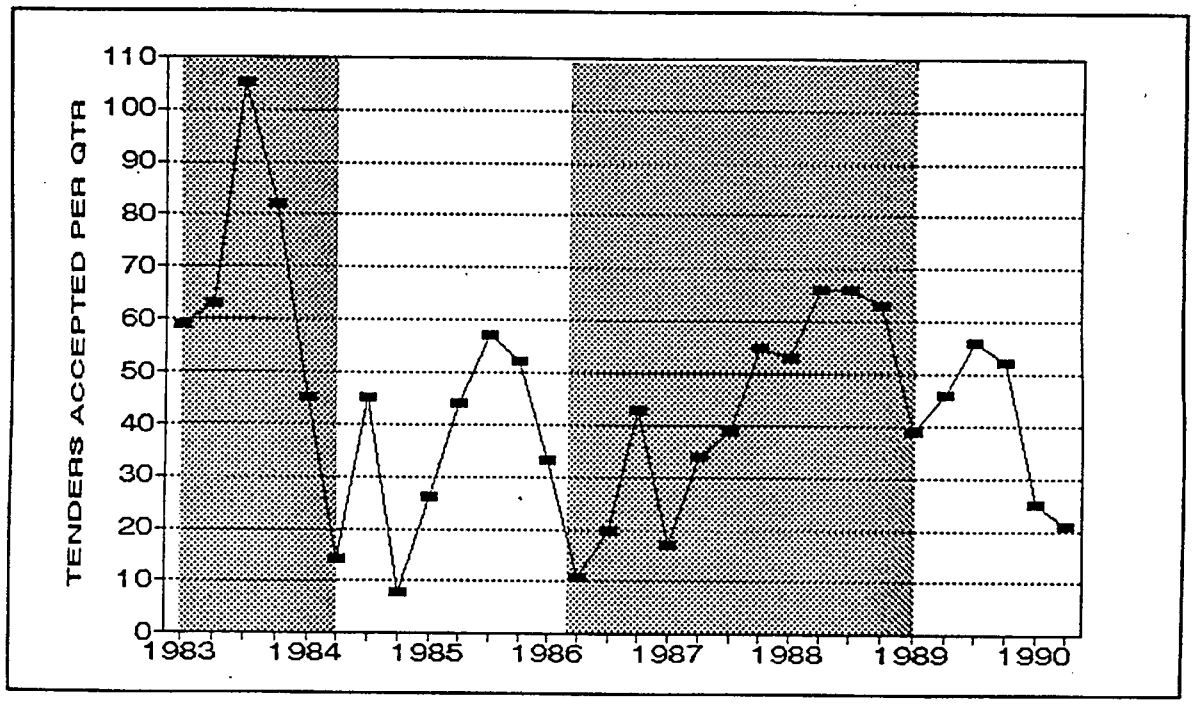


FIGURE 4.7 GOVERNMENT PROJECTS 'TENDERS ACCEPTED' 1983/90
Source of data: BER BCI

some will be housing

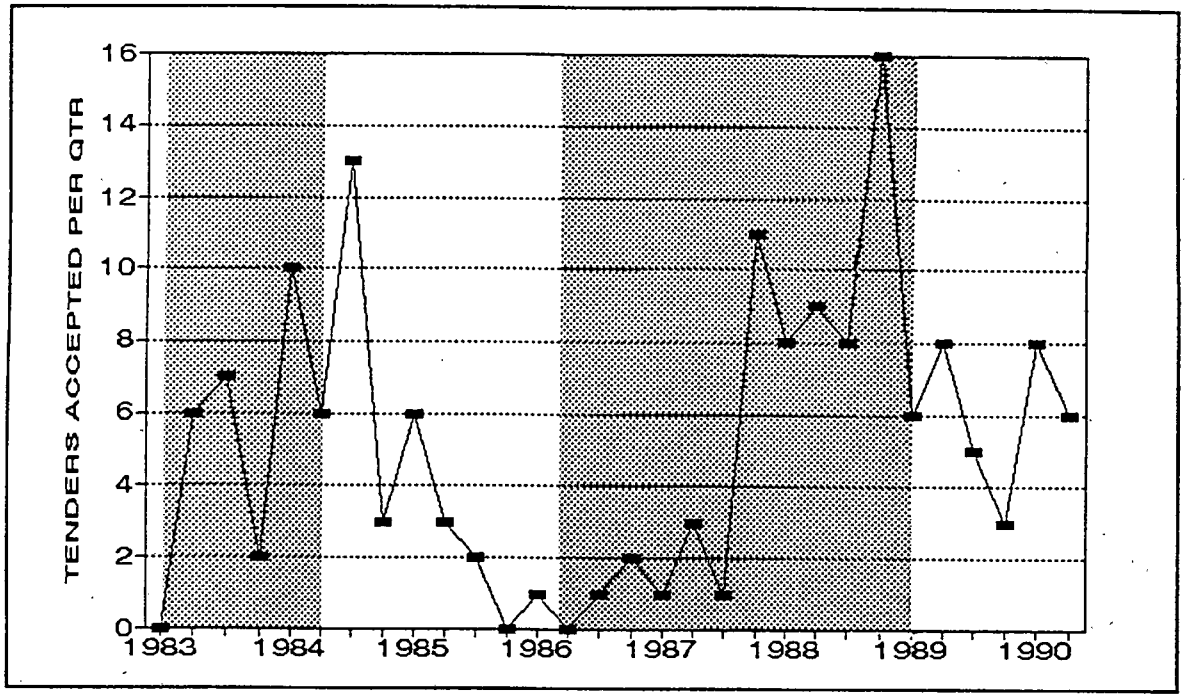


FIGURE 4.8 HOUSING PROJECTS 'TENDERS ACCEPTED' 1983/90
Source of data: BER BCI

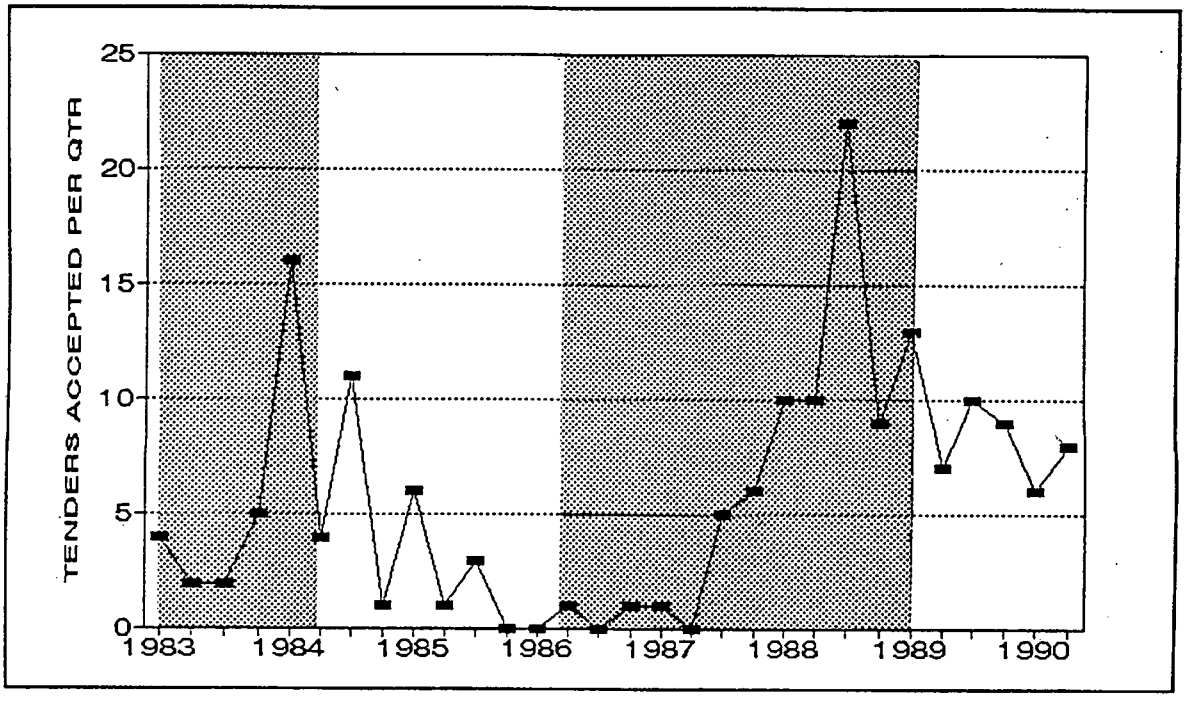


FIGURE 4.9 INDUSTRIAL PROJECTS 'TENDERS ACCEPTED' 1983/90
Source of data: BER BCI

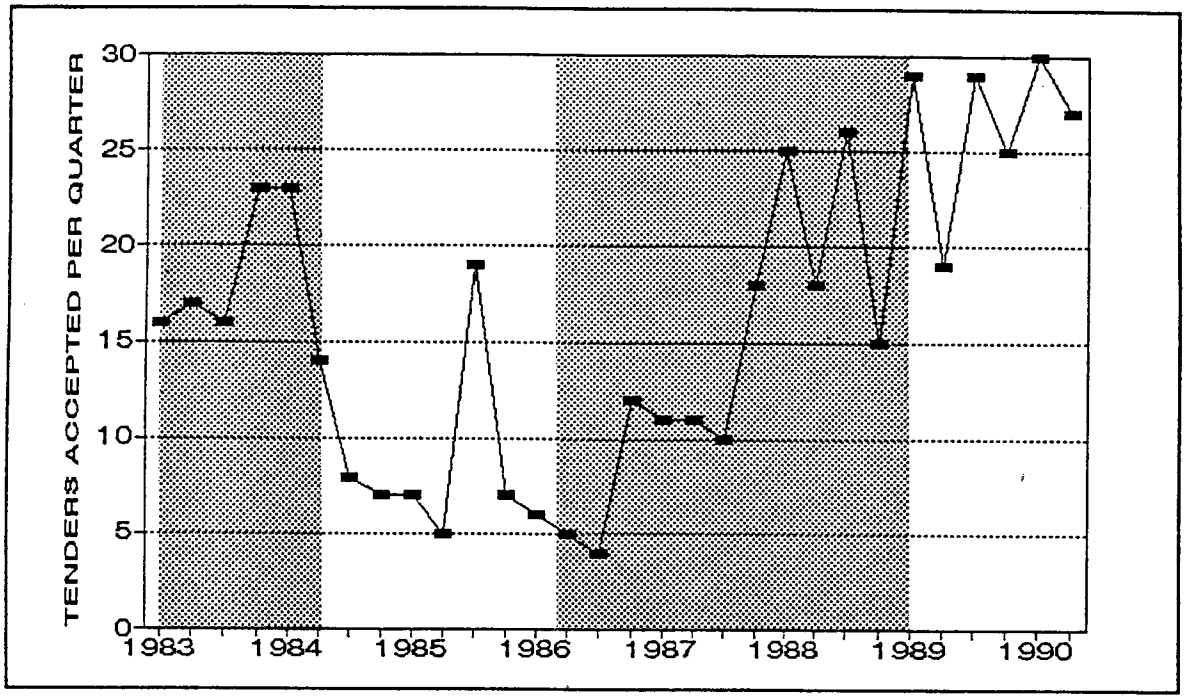


FIGURE 4.10 COMMERCIAL PROJECTS 'TENDERS ACCEPTED' 1983/90
Source of data: BER BCI

4.4 THE AVAILABILITY OF BUILDING FORECASTS

In section 3.6 of the Review of Related Literature, Chapter three, a list of the economists who offer a service to the industry was provided. Few of those economists are prepared to put forward forecasts of the anticipated turning points except by using broad descriptions of possibilities, as in the BER quarterly reports. The more specific forecasts are not seen by the general construction public but they are available to those who need specific information and are prepared to pay for it. **Figure 4.11** is an example of a forecast, which was produced by Medium Term Forecasting Associates (MTFA) for their clients. It indicates the current position of the cycle for four 'sectors', Public Residential, Private Residential, Public non-residential and Private non-residential and displays the likely turning point.

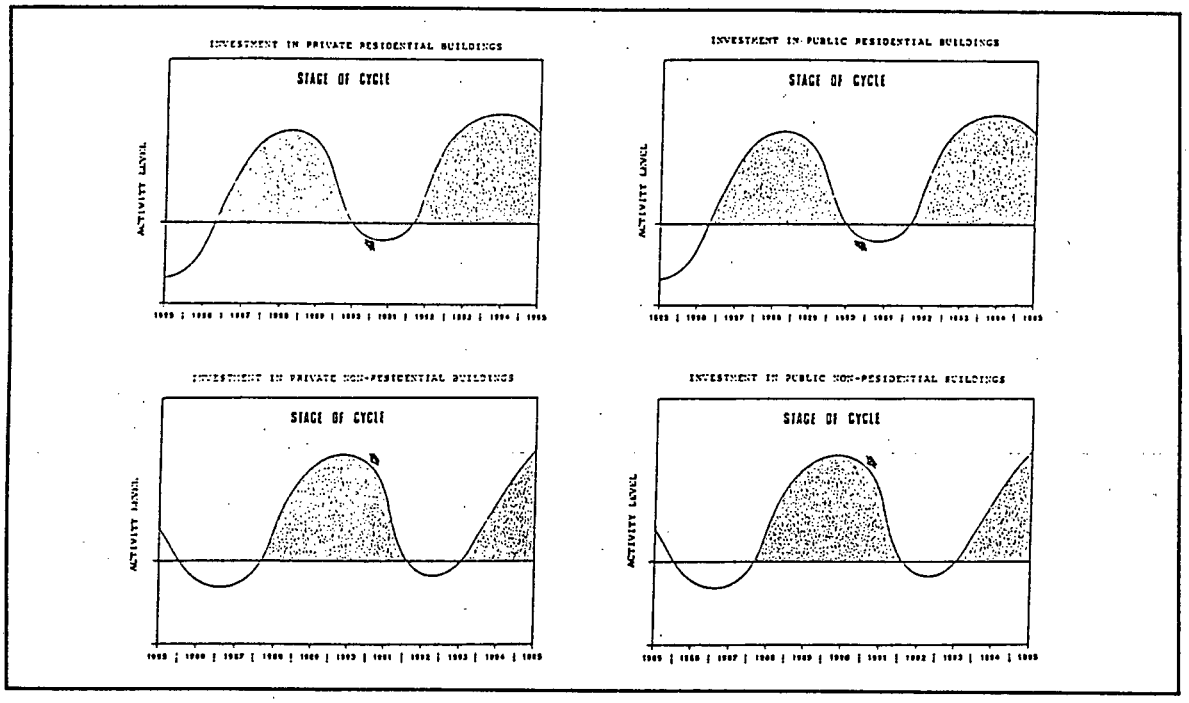


FIGURE 4.11 FORECAST OF CONSTRUCTION SECTOR ACTIVITY CYCLES
PRODUCED BY MEDIUM TERM FORCASTING ASSOCIATES

4.5 SUMMARY AND CONCLUSIONS

4.5.1 SUMMARY

In this chapter it has been shown that:

* There is a short term building cycle which fluctuates in sympathy with the general business cycle.

* This building cycle cannot be accurately defined or predicted for the following reasons:

  - The construction industry is an amalgam of several sectors which have differing patterns of behaviour.

  - Data is scarce and unreliable.

  - More research in needed to gain improved understanding of the data and the influence of the sectors.

* The building cycle may be less important to the industry than the building demand cycle.

* Two new sources of time series exist which display an ability to provide more detailed information about the behaviour of the various sectors of the industry.

* The behaviour of each sector, demonstrates a relationship with the business cycle in terms of the turning points, or 'Peaks' and 'Troughs', that can be measured. However, much more measurement is needed before definite relationships can be claimed and predicted with any degree of accuracy or confidence.

4.5.2 CONCLUSIONS

The business cycle and the demand for new buildings behave in sympathy with each other and, as a result of this, the short term building cycle is seen to behave in sympathy with the business cycle.

An understanding and ability to forecast the demand for construction would be more useful and important to the industry than knowledge of the construction cycle.

A change in terminology would seem to be appropriate to better describe these cycles:

* The building demand cycle.
* The building activity cycle.

The BER time series 'building tenders accepted' is a quantitative source of data not previously used, that can provide valuable information about sub-sector demand and activity cycles.

Building economists are able and willing to make forecasts concerning likely turning points in the business cycle, even though the data has been found to be lacking.

THE FIRST SUB HYPOTHESIS

The first Hypothesis was stated thus:

Changes in the demand for construction are closely linked to the business cycle. When in a recovery phase, demand will be high though it will 'lag' the cycle by several months. When the cycle is in the recession phase demand will be weak.

It has been shown that there is close correlation between the business cycle and the demand for construction but the measurement of 'lead' and 'lag' is inconsistent for the aggregate of construction and canot be said to 'lag'. However, it would appear to be consistent within a sector but more research ('tenders accepted' observed over a longer period) is required before accurate conclusions can be drawn for the behaviour of each specific sector.

CHAPTER FIVE

THE EFFECTS OF CYCLICAL FLUCTUATIONS IN DEMAND ON THE CONSTRUCTION INDUSTRY

In this chapter sub-problem No. 2 will be investigated:
What are the effects of fluctuations in the demand for construction work, on construction companies ?

5.1 INTRODUCTION

In Chapter 4 it was shown that there are fluctuations in the demand for construction that are related to the business cycle. In other words, the volume of work, introduced into the market place, in terms of the number of projects and its total value, will fluctuate in sympathy with the business cycle. The effects of these fluctuations, will be investigated in this Chapter.

It would seem that the effects of the fluctuating demand for construction are common knowledge within the industry, at least, amongst those who have experienced two or more full business cycles. However, the review of related literature and of other researchers has revealed that no in-depth analysis or measurement has been undertaken. As a result, a wide variety of data, including the news media have been used to test Hypothesis number two.

5.2 ANALYSIS OF THE DATA

In order to ensure that all of the effects of fluctuations in demand are discovered, the author has investigated them from three points of view:

The trading environment. (construction marketplace)

The company. (the typical general contracting company)

The industry. (those elements which make up the wider industry, manufacturers/suppliers/designers/unions/etc)

5.2.1 EFFECTS ON THE TRADING ENVIRONMENT (MARKET PLACE)

It would seem to be logical to expect that when there is an increase or a reduction in demand, each company that is competing for work will, similarly, get an increased or reduced share. However, construction projects are not simply, shared out amongst companies. Contractors are asked to compete for them and, whilst each company would like to maintain at least a constant level of turnover to support the fixed portion of its overhead, this is not the case. In competitions there are winners and losers and some companies may achieve their target but most do not.

Four aspects of change in the market place are investigated and described here:

(i) Degree of competition for work and resources

Figure 5.1 indicates the degree of competition for work as described by the respondents to the BER quarterly building surveys. This is qualitative data which is based upon the opinion of contractors, without measurement. **Figure 5.2** also

indicates the degree of competition for work but this is quantitative data, obtained from the Cape Peninsula MBA. It shows the actual number of bidders for each project, taken as an average per month, over a period of ten years. Both sources show clear inverse correlation with the changes in the volume of work and the latter provides evidence of the worth of the BER data.

The degree of competition will depend upon the amplitude of the cycle and in severe recessions the competition becomes so intense that contractors are prepared to bid at their estimated cost in order to obtain turnover, this fact is supported by Snyman who showed that contractors cut margins when competition is intense, and increase it as competition is decreased, see Hackney (1986) and also Eccles (1990) who stated that the National Productivity Institute had calculated that, in 1987, contractors were submitting tenders that were 25% below economic levels necessary for long-term survival.

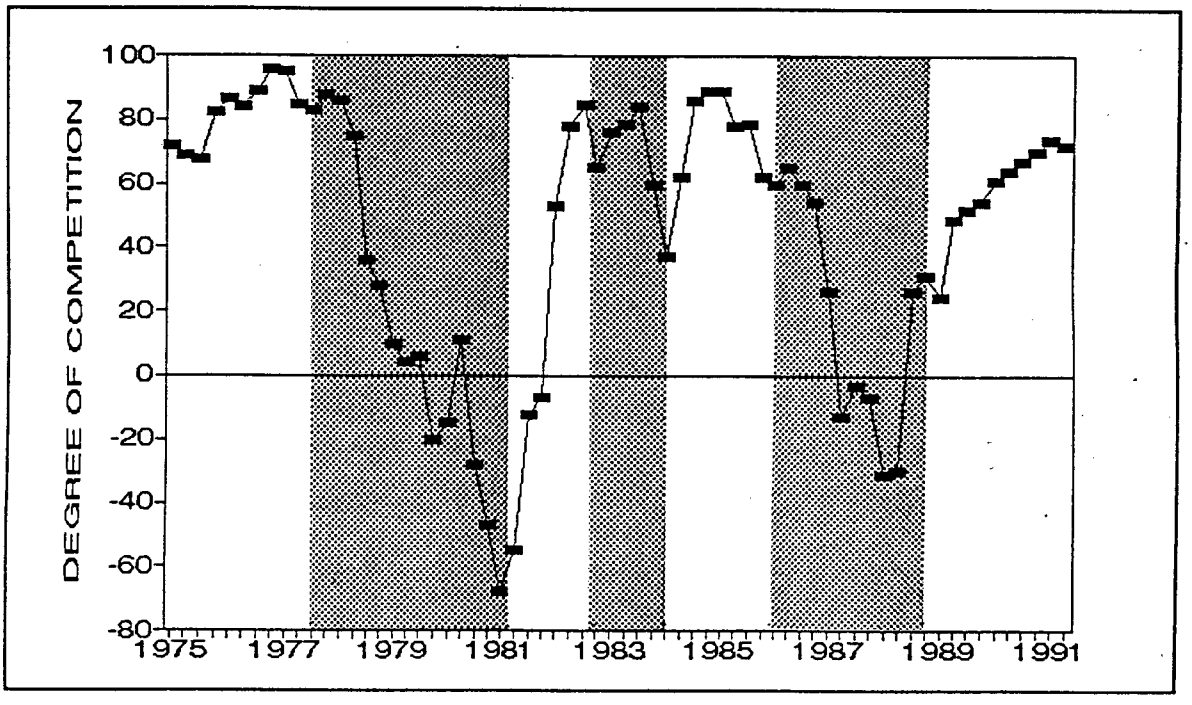


FIGURE 5.1 DEGREE OF COMPETITION IN TENDERING
Source BER national survey

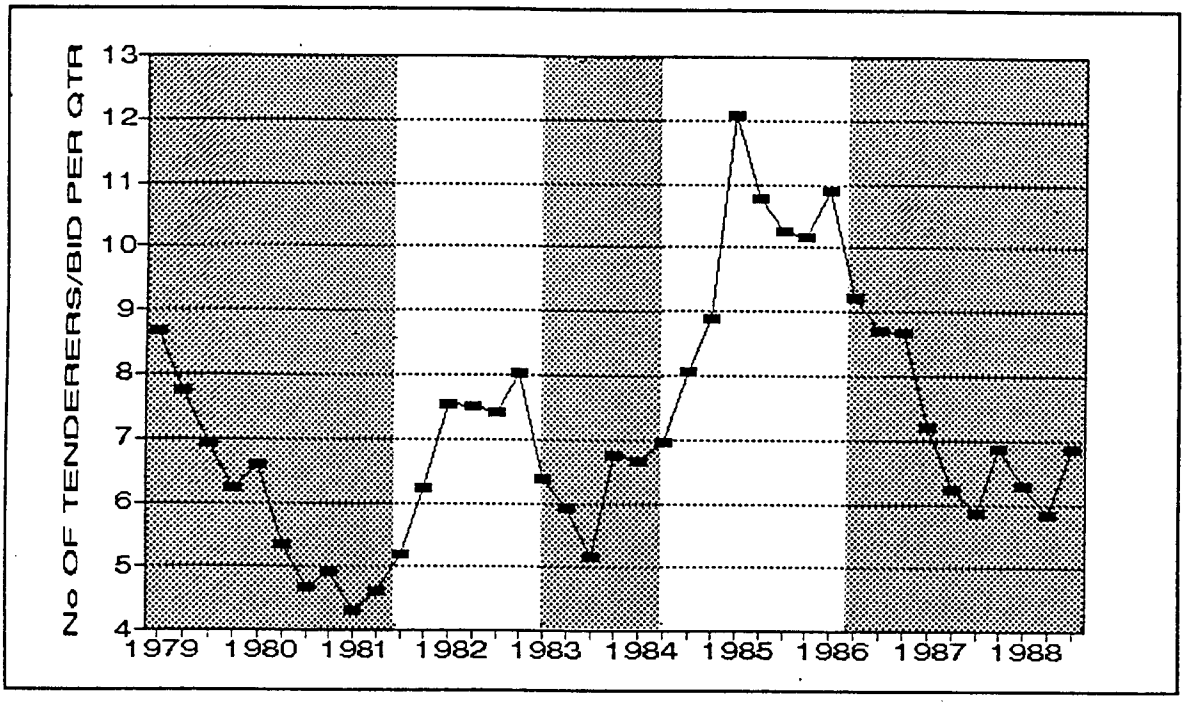


FIGURE 5.2 DEGREE OF COMPETITION IN TENDERING WESTERN CAPE
Source Cape Peninsula MBA

Fraser (1989) speaking as the President of BIFSA, stated;

> *We have allowed ourselves to put survival before earning profits commensurate with the risks we accept - we have allowed ourselves to be conned, or conned ourselves into doing work at ridiculous margins, which in turn produces returns totally unacceptable to shareholders. We have become lemming-like in our determination to get continuity of work at any cost.*

In the UK they have experienced the same phenomenon. In an article entitled "Recession: how hard is it biting?", Lyttleton (1990) interviewed several builders, two of whom are quoted here:

> *The first half of the year got more difficult because house builders returned to contracting with very, very stupid prices - lower than our cost.*

and ....

> *The first half of the year was grim - absolutely horrendous. It was a nightmare trying to maintain turnover. The large companies have taken on jobs at cost,..I would say that margins have dropped by 5% in the past 18 months.*

In Singapore, Li Hang Han (1986) found that the average number of bidders on projects in a certain size range increased by 12% between 1984 and 1985. Li deduced that the increase was due to the down-turn of the industry that had occured at that time.

(ii) Clients and consultants

During a prolonged recession relationships between the professions, clients, contractors and subcontractors deteriorate because of the pressures of survival. At such times an increase in the use of unreasonable conditions of contract is often found. These conditions are imposed on contractors who are desperate to obtain work and are designed to achieve maximum advantage for the client or design team. This abuse of position tends to anger the contracting fraternity because they depend upon the consultants, who are placed in the position of judge and jury in a building contract, to ensure that 'fair and reasonable' conditions are applied at all times. Many references to support this are to be found in construction journals, but perhaps the most appropriate is Rouse (1990) who, in an article entitled "Standard Conditions of Contract - To be or not to be?" lamented the fact that a trend had occurred, at that time, by which the standard conditions of contract were being changed and added too. Individual clients and quantity surveyors were seen to be responsible for the incorporation of many new and unreasonable clauses. A special seminar was held in Cape Town during 1990, to address the same issue, which caused a great deal of concern amongst contractors and some quantity surveyors, in the region. The seminar was jointly convened by the ASAQS and the Cape Peninsula MBA. It was clearly established that the use of such clauses was increasing even though the majority of the

delegates at the seminar were in agreement that standard clauses should not be changed.

One particular condition of contract that is affected by the amount of competition for work, is the contract duration. It is usually the client and consultants who set the contract duration, prior to each tender and it is noticeable that such durations tend to be shortened when competition is strong and more reasonable when competition is weak. This is both a factor of client demand during recessionary periods and contractor demands during upswings. To quote Kaminsky (1988):

> *Take the hypothetical example of a contract that was being done in 24 months five years ago and in 12 months a year ago. Today that same contract cannot be done in 12 months. It can be done in 14 or 15 but not in 12. The industry is simply too stretched to cope with the demands being placed upon it.*

Designers who are faced with the effects of fluctuating demand, usually reduce staff during downswing periods and are often unable to cope with the increased workload in an upswing phase. Campbell (1974) noted that the rapid increase in design office workloads, during an upturn, creates a situation where projects are rushed or delayed and tender documents are sent out with incomplete information
Contractual claims are more often found, resulting from contracts that were won during the recession or trough of the cycle. The potential reasons for this are the unreasonable conditions and contract durations noted above, and as a result of the intense competition which, in turn, may causes contractors to tender on unrealistic expectations of cost and no profit. As a result of this, contractors often look for opportunities to recover losses through contractual claims. This view is confirmed by Diekman and Nelson (1985). They suggest that the conventional wisdom of the industry follows the belief that a contractor who bids far beneath his competition is likely to try to recoup losses with more claims activity, their findings were confirmed in a study of 22 projects.

Another symptom of the fluctuating volume of work is the effect that it has on the resources used by construction companies in the assembly process. It would seem

that there are always shortages during an upswing and oversupply during a downswing for certain key resources. Because this is such an important effect it is dealt with in more detail in section 5.2.2.

The construction process is extremely complex and entails the involvement of many different types of business organisation and resources in each project. All of the above mentioned effects are experienced by these organisations in one way or another, and it is perhaps understandable that the most prevalent attitude amongst them, during a recession, is explained in the expression, 'every man for himself', regardless of the fact that this is the most appropriate time to work together. At such times commentators describe the situation as 'fragmented'.

One such person is the Executive Director of BIFSA, Mr D N Fraser, who, when taking up office in 1988, stated that one of his biggest challenges was the task of bringing unity to this fragmented industry.

(iii) Building cost performance

The traditional and most prevalent method of building procurement is the lump-sum tender. Two of the most significant factors that influence the lump sum price for any building are, the degree of competition amongst building contractors (see 5.2.1 (i)), and the rate of inflation, real or anticipated. Because these factors have a large impact on construction industry clients and their attendant advisors, quantity surveyors, much research has been conducted in this area. In South Africa and several other countries, methods of measuring the fluctuations in building costs have evolved. One is a measure of tender prices and the other is a measure of the increase in labour and material costs.

TENDER PRICES

Two indices are used to measure the change in tender prices in South Africa:

- The BER Building Cost Index, and the
- Central Statistical Services; Contract Price Index for Buildings.

In a paper entitled 'How the business cycle influences building costs" Snyman (1989)b commented on his analysis of these indices. He compared the BER index with the business cycle and the BER 'competition in tendering' data, **Figure 5.3** demonstrates the correlation between them, from which Snyman deduced the following:

* Tender prices rise rapidly during the upswing phases.
* Tender prices decelerate during the recessionary phase.
* In severe recessions the index dropped in absolute terms
* Tender prices rise more rapidly and to a higher level in the long upswing phase than in the shorter ones.
* In three instances the index tends to move sideways, before accelerating once again.
* rising tender prices reach their peak towards the end of the upswing phase. (except in 1971 when excessive speculation in property, and exchange control, lead to a building boom that subsequently ended with the bankruptcy of many development companies.)

ESCALATION INDEX

Three types of Contract Price Adjustment Provision (CPAP) can be used to compensate contractors for the effects of inflation on the cost of labour and materials in a construction project, they have colloquial names:

The Baxter Formula; used for civil engineering works.

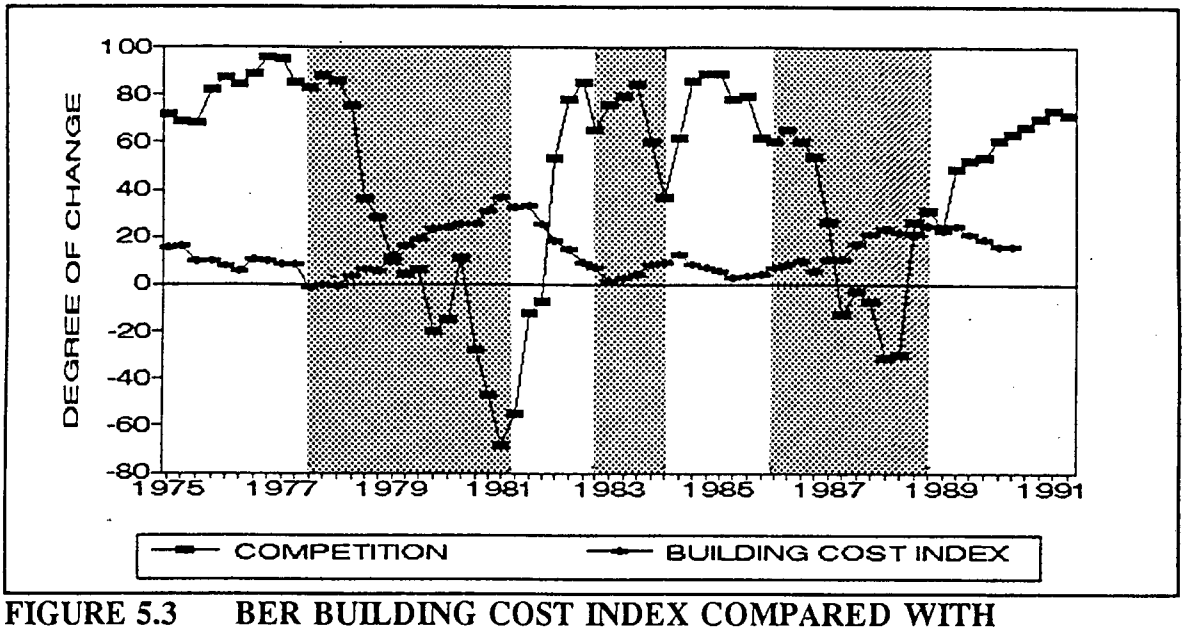


FIGURE 5.3 BER BUILDING COST INDEX COMPARED WITH BER DEGREE OF COMPETITION IN TENDERING
Source: BER

The SEIFSA index; used for projects with a high steel content.

The Haylett Formula; used by the building industry.

The Haylett Formula was introduced in 1976 to allow fair adjustment for the effects of inflation on a contract price over the projects duration. However, since then it has been the subject of much controversy and there are those who believe that it contributes to inflation. Kilian and Snyman (1985) investigated these claims and concluded that CPAP is not inflationary. They addressed the issue of apparent under and over compensation which is indicated in **Figure 5.4**, and gave a full explanation which can be summarised, by stating that the index is compensatory, (that which is lost in one phase of the business cycle is regained in the next.)

Perhaps it could be said, however, that if a particular building project did not take in a complete cycle, the compensatory effect would not develop and either over or under compensation could occur. Over compensation during a recessionary phase and under

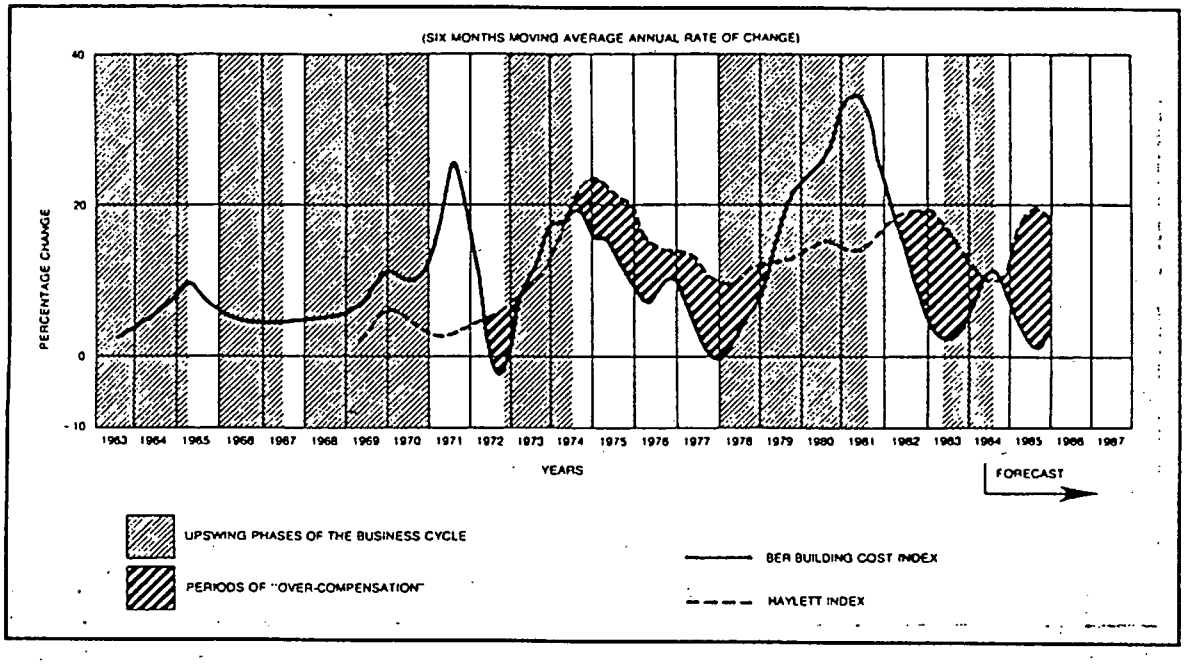


FIGURE 5.4 CPAP HAYLETT - OVER AND UNDER COMPENSATION
Source: Kilian and Snyman (1985)

compensation during an upswing. Few complaints are heard during the recovery phase, but in the recession phase many protests can be heard from clients, and quantity surveyors in private practice, Bester (1991) and Steele (1991).

5.2.2 RESOURCES

The resources that are considered here are, materials, labour, subcontractors, plant and equipment.

> *In each upswing phase there are labour and material shortages which are reversed in the recessionary phase. Snyman (1989)b*

(i) Building materials

Figure 5.5 indicates that material shortages become more pronounced in the growth phase and reduce in the downswing. Correlation between the turning points of the business cycle and material shortages, is quite remarkable.

Parkyn (1988) stated;

> *Booms mean shortages, black markets, imports and phoning around.*

He also noted a lack of choice and that alternatives needed to be searched for because of long delivery delays of the more popular products, see Morris (1983), Davis (1986).

Campbell (1974) noted three aspects of material supply effects:

downturn	- excess material stocks
	- excess production capacity
upturn	- shortages of materials.

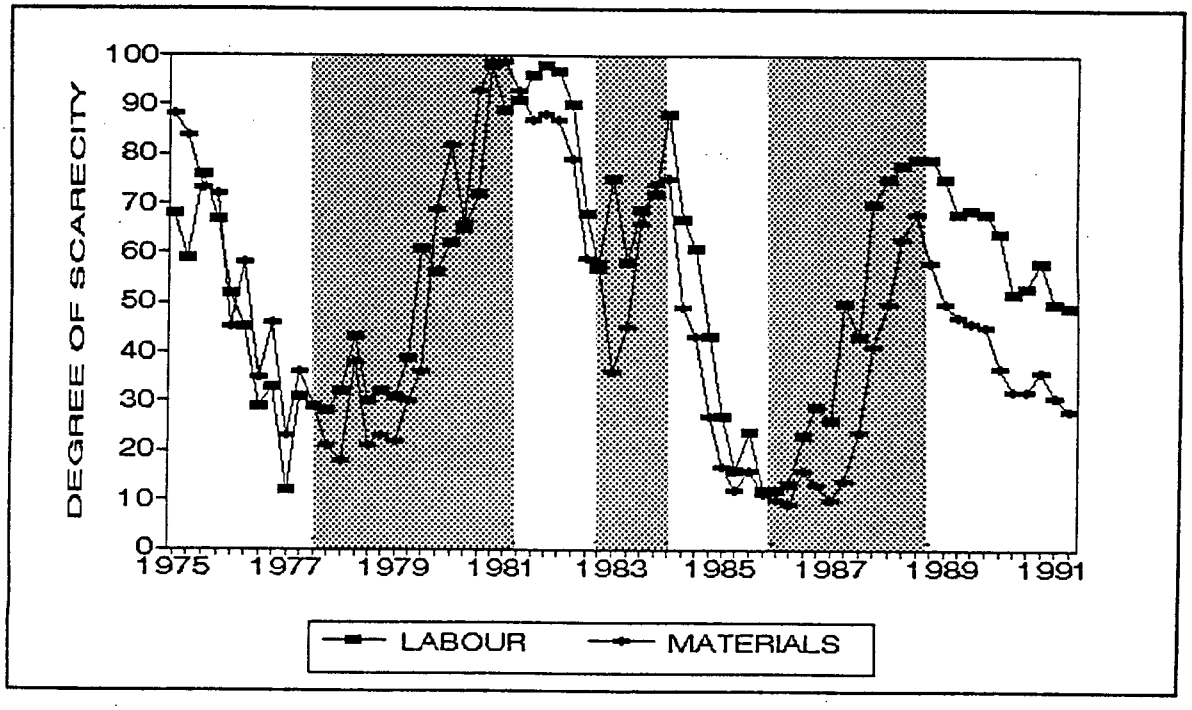


FIGURE 5.5 AVAILABILITY OF LABOUR AND MATERIALS
Source BER national survey

During the severe recession of 1984-86 in South Africa several manufacturers closed down plants and factories. One such manufacturer, Corobrik, made a number of changes nationwide and as an indication, those changes made in the Western Cape area are described in **Table 5.1** Each of the closures, and the reopening, were made in response to changes in demand. Corobrik were reluctant to provide the cost of these changes, but they did indicate that it was a great deal of money, given the high cost of retrenchment. Since, this company have survived it can be surmised that they have, or will, recoup the costs by increasing the price of bricks when conditions are favourable.

Table 5.1. **COROBRIK (W. CAPE.) ADJUSTMENTS MADE TO PRODUCTION FACILITIES AS A RESULT OF DEMAND FLUCTUATIONS 1985 - 1990.**

DATE	PRODUCTION FACILITY	STATUS
July 85	Killarney Plant	Closed
Oct 85	Paarl Plant	Closed
Feb 85	Somerset West Plant	Closed
May 88	Paarl Plant	Re-open
April 89	Fasaantekraal Plant No 1	Closed
Sept 89	Stellenbosch Plant	Closed

Not all recessionary phases are as severe as that experienced in 1984-86, and in less severe recession periods, plant closures may not be necessary but production costs soar, in terms of cost per unit produced, when plants are not at full production. Some manufacturers continue to produce ahead of demand and they are faced with the problems of stockpiling (where the product is not perishable) or of reducing production and maintaining a heavy fixed overhead. Rowley (1991), quoted the President of the Concrete Masonry Association Mr R Low when he stated that the brick making industry (Western Cape) was operating at 63% capacity. He went on to say;

> *To operate capital intensive factories with high overheads at such low output levels is inefficient and raises manufacturing costs. Worse still, if the factories close down they will not re-open, so that when revival occurs brick shortages will drive prices even higher.*

Thake (1974) described the fluctuations in demand as the primary cause of material shortages during the recovery phase of the business cycle. He pointed-out that decisions to invest in new production facilities were made two or three years before they could be brought 'on-stream', this often places the decision time in the recession phase when few can be optimistic and thus the decision was invariably postponed.

(ii) Human resources

In Building Survey No. 50 (1981) the BER commented on the phenomenon whereby the level of building activity at that time had surpassed the levels which prevailed in 1974, whilst the level of employment of skilled labour had not returned to the 1974 levels. They gave two reasons for this:

> *Artisans who were shaken out of the industry during the severe recession have not all returned to the building industry. Similarly, few apprentices were attracted to the industry and consequently skilled labour could not be increased to meet the demand for their services.*
>
> *The industry was therefore forced to substitute capital for labour. Given South Africa's need for employment creation and scarcity of capital this development is not in the country's long-term interest.*

Another reason for this is the trend towards self employment of skilled labour, in the form of subcontracting. Campbell (1974) referred to the growth of self employment during an upturn, mainly amongst operatives, but also in professional staff. Whilst in a downswing period one could expect: high unemployment and reduced earnings for operatives, professionals and managers and an outflow of men from the industry.

In an interview for the Financial Mail, Neuberger, (1991), stated:

> *The industry is already thin on labour and management, and it gets thinner after every recession, the amount of labour that doesn't come back is frightening. It's also likely that we won't replenish plant and, when a boom comes again, we wont have sufficient plant or labour.*

In his annual report for 1982, the then BIFSA president noted that 40% of the building industry craftsmen had left, to go into other, more stable, employment as a result of the 1976 to 1979 recession.

Eccles (1990) whilst commenting on the effects of fluctuating funding, estimated that between 30% and 50% of the technical staff trained within the civil engineering industry, leave it because of the 'boom and bust' conditions, to find more stable employment.

Fraser (1989) in his President's address at the 1988 BIFSA congress, expressed his concern that the anticipated recession would cause, not only the loss of the less efficient contractors and employees, but also the more efficient ones may choose to leave the industry because of frustration at the low level of returns that would be experienced.

Given that such numbers leave the industry in the recession phase, it is hardly surprising that shortages of skilled people are experienced during the growth phase. Campbell (1974) noted that during an upturn contractors experience an acute shortage of operatives and managers.

(iii) Subcontractors

The frequency and amplitude of recessions in South Africa in recent years, is one of the significant reasons behind the trend towards growth in the number, and use, of subcontractors in the building industry. This was shown by Krafchik (1990) who found that contractors gain advantage by virtue of being able to vary employment without the concern of retrenchment and that the quantity of equipment and supervision that they require to support direct employees is much greater than for subcontractors. This preference for subcontractors is easily satisfied because of the large number of artisans and supervisors who are retrenched at such times who, quite naturally, turn to subcontracting.

The British experience was similar, Gray and Flanagan (1989) investigated the changing role of specialist and trade subcontractors, brought about by a significant shift from direct employment to subcontracting. They stated that the trend resulted from a number of pressures, most important of which, being the volatility of changes in construction activity. The following quote is from page 1 of their report;

> *There has been no single factor which has accelerated the development of subcontracting. It has resulted from a gradual squeezing of employment opportunities as the construction industry has responded to the variations in workload over the past twenty years. A variety of pressures, from depression to boom, from high levels of employment to unemployment, from traditional technology to high technology, from predominance of public sector investment to a predominance of private sector investment and the need to build faster, have all played their part in changing the construction industry. The emergence of the subcontracted labour base of the industry has been a significant response to the volatility of these changes.*

Whilst the foregoing quotation describes the changes in the British construction industry, the reader may find a remarkable resemblance to the changes that have taken place in the South African industry over the past ten years.

One other effect, pertinent to subcontractors is found by virtue of the fact that contractors have a tendency to treat subcontractors in a shabby fashion during severe recessionary phases. Typically, by touting prices after tenders have closed, in order to negotiate or squeeze a price reduction from the subcontractor of their choice. Ironside (1989) referred to this in these terms:

> *During this period there will be a certain amount of 'horse-trading', with each sub-contractor being played off against another in terms of price.*

In addition, unfair conditions of contract and late payments seem to be the order of the day. Several authors have referred to these aspects including, Huxtable (1988), Fraser (1989) and du Plessis (1989). Subcontractors who have suffered this kind of treatment and survive the recession, will react in better times by withholding their services from those who have mistreated them or by adding a premium to quotations and, in this way, prevent those contractors from obtaining the lowest quotations or, if the price is accepted, take a larger profit share in order to make-up for past losses, all at the main contractors expense.

(iv) Plant and equipment

When recessions are prolonged or very deep, contractors tend to ignore depreciation and replacement costs of plant and equipment when tendering. They are reluctant or unable to replace old items for more efficient ones and may even sell-off surplus plant and equipment, at cut-rate prices, simply to maintain cash flow. Eccles (1990) estimated that between R50 and R100 million of plant was sold and exported, during the depths of the recession, between 1984 and 1987. He noted that the replacement

price was subsequently more than double its original purchase price as currency exchange rates were halved. Neuberger (1991) stated:

> *It's also likely that we won't replenish plant and, when a boom comes again, we wont have sufficient plant or labour.*

In the UK, Moore (1984) noted that construction firms reduced plant holdings, creating heavy reliance on hired plant and operators, during a prolonged recession.

The plant hire sector is one where the key players have been decimated by the combined effects of unfavourable exchange rate changes and the recession of 1984-86. Very few companies have survived. Even the formwork manufacture and hire companies have been affected. Through the 1970's and early 80's there were five large independent companies, 'Acrow', 'GKN Mills', 'SGB', 'Formscaf' and 'Linkform'. Of these only Formscaf has survived as an independent company and it has acquired controlling interest in three of the others and the fourth was bought out by LTA.

5.2.3 INDIVIDUAL COMPANY EFFECTS

Eight types of effect are dealt with in this section:

(i) Productivity

To anyone familiar with production and productivity it will seem obvious that productivity cannot be maintained at reasonable levels when the labour force is constantly changed, and this is what must happen to any company that has a continuously fluctuating work load. Thake (1974) stated:

> *Discontinuity means that teams of men and management, built up during the design and construction phases of a project, are often dispersed at the end. It is often just when the learning curve has flattened out that this shake-up occurs.*

This is why the industry has a reputation of one where 'hire and fire' is standard practice, it contributes to the poor image of the industry and a reluctance, amongst the most qualified candidates, to join it. It should be equally obvious that, when companies are faced with periods of declining work load, they will retrench (make redundant) the less effective people, plant and machinery. That which remains will be the best and will be more productive. The converse must also be true when the work load increases, due to the fact that untrained people are recruited who will, at best, require several months in which to familiarise themselves with the company methods and their peers. Taken overall, the conditions are not conducive to employee loyalty, motivation and high productivity. Jacobsen (1987)b.

Regardless of the short term gains in productivity, which are often found when companies reduce labour, because:

- the most productive people remain
- supervision ratios are improved
- workers tend to work harder to maintain their jobs

long term productivity has been shown to suffer. This is because companies do not invested in new technology, plant or research during such periods. In a paper presented by Eccles (1990) of the National Productivity Institute, based upon a composite measurement of productivity in road building, from the data obtained by measurement, he claimed that the fluctuating funding levels of road construction had caused contractors to deviate from a steady productivity improvement trend. The deviation occurred when, in order to survive two periods of severe reduction in funding, contractors were forced to cut prices and sell plant to achieve turnover, which, whilst providing the client with cheaper roads in the short term, caused the long term trend to fall away. Eccles claimed that, had steady funding levels continued the trend of improved productivity would have surpassed the short term gains and given the clients 'more road for their money'.

> *There is no doubt that the massively fluctuating funding of construction works in South Africa has had a particularly adverse effect on the productivity levels of both private contractors and the Provincial Administration.* Eccles (1990)

The measurements made by Eccles clearly show that productivity is affected by the demand for new roads, and this is demonstrated in **Figure 5.6**

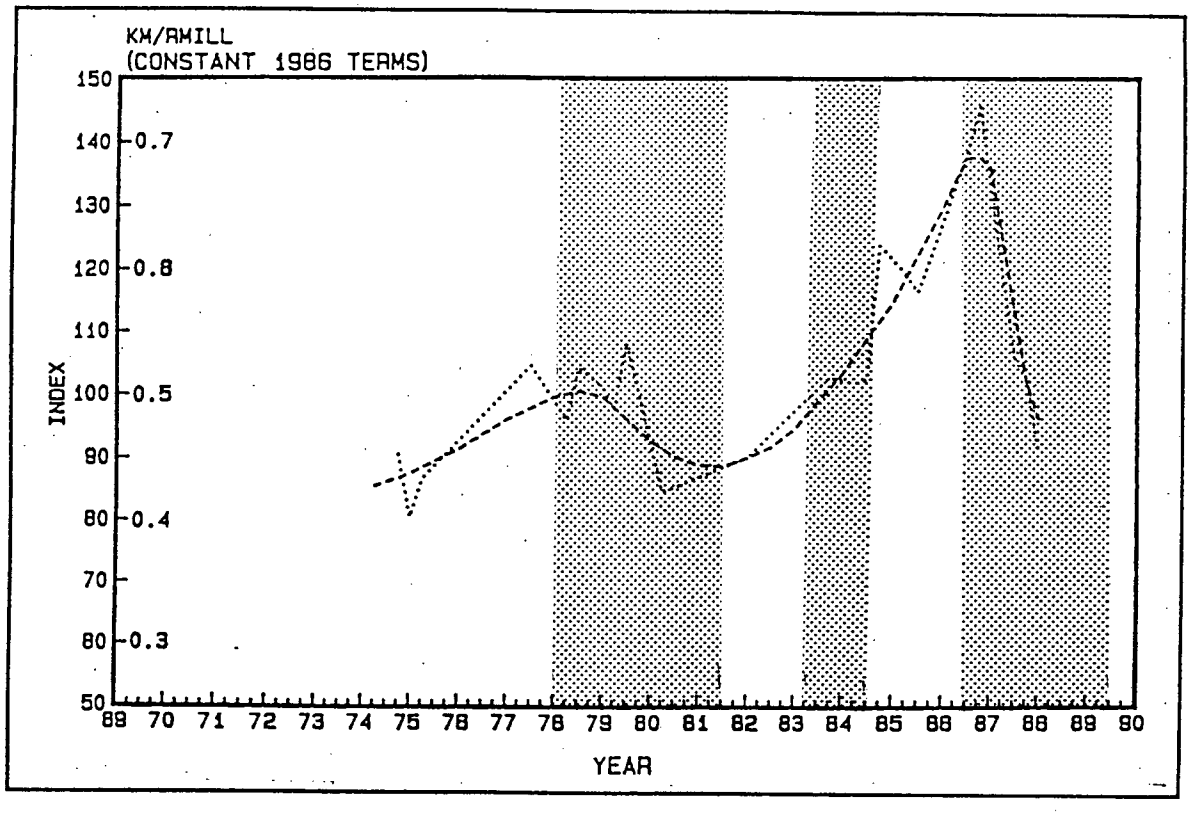


FIGURE 5.6 EFFECT OF A MAJOR RECESSION ON LONG-TERM PRODUCTIVITY Source NPI

In Building Survey No. 59, (1983) p. 18, whilst commenting on a period which had experienced inflation which was lower than the norm, the following potential reasons were expressed:

* increased tendering competition;

* improvements in labour productivity resulting from greater job insecurity;

* general free availability of labour and most materials.

(ii) Risk

The degree of risk to which contractors are exposed will be affected by the stage of the business cycle at two levels:

1) As a business entity
2) At individual project level

As a business entity the effects of the business cycle will cause the availability of finance and credit to fluctuate, usually causing shortages during the recessionary phase, when it is needed to compensate for a reduction in cash flow. The cost of borrowing is also greater at such times. In addition, for reasons which have been dealt with elsewhere in this Chapter, when competition for sales intensifies communication between business contacts and competitors is reduced, and all categories of support tend to be reduced as each individual and company is required to work harder for themselves in order to survive.

At the project level the availability of resources is a key aspect of risk and in section 5.2.2 it was shown that availability of these resources are, counter cyclical, in that they are available in the recession phase and scarce in the growth phase.

When few customers are to be found and turnover levels are falling below the optimum, contractors are inclined to undertake work which is not in their traditional trading area or work of a type which they do not normally attempt, this will be shown in Chapter eight and Figure 8.1. In addition, more stringent conditions of contract are often encountered, these are described in 5.2.1 (ii). All of these factors are potential areas of increased risk to be found in the recession phase.

Table 5.2 indicates the two key activities of a construction business, those of 'sales' and 'production', and shows that the risk element for one is high when it is low for the other and that the position is reversed when the cycle changes.

Table 5.2 THE RELATIONSHIP BETWEEN RISK IN SALES AND PRODUCTION DURING THE RECESSION AND RECOVERY PHASES OF THE BUSINESS CYCLE

PHASE	SALES	PRODUCTION
RECESSION	LACK OF CHOICE PRESSURE TO WIN - HIGH RISK -	RESOURCES PLENTIFUL ESCALATION MINIMAL EXPERIENCED TEAMS - LOW RISK -
UPSWING	SELECTION POSSIBLE NEGOTIATE CONDITIONS - LOW RISK -	RESOURCES SCARCE COSTS ESCALATING OVERSTRETCHED - HIGH RISK -

(III) Profitability

In section 5.1 the degree of competition between contractors was shown, Figs 5.1 and 5.2, In a prolonged downswing phase, competition can be extremely fierce, to the point that bids are won at prices that are so low that loss rather than profit, is often the result at the completion of the project.

Clogg, (1989) stated, (Group Five)

> *Many of Goldstein's problems arose from tendering too tightly, a common problem in the industry. It's hard not to be a stupid lemming if everyone else in the market is.*

Brink, (1989) stated, (Murray & Roberts)

> *The recovery in operating margin has been less dramatic largely because construction margins are still unsatisfactory. From 5,7% in 1984, the margin slid to 4,5% in 1985 and 2,3% in 1986. It was 3,6% in 1987, 4,6% in 1988.*

Davies, (1989) stated, (LTA Construction)

> *Contracts secured during the economic downturn, and which had been the subject of losses, have now been almost completed and order books are looking more attractive, with margins set considerably higher than a year ago.*

Davies, (1991) stated, (LTA Construction)

> *The construction industry is reacting to the downturn in its traditional manner. Work is being taken at minimal margins and sometimes below cost merely to maintain turnover.*

High risk projects have greater potential for things to go wrong than those with a low risk rating and since more high risk projects are undertaken when competition is fierce, it is likely that losses rather than profits will be the outcome of projects won in the trough phase of the business cycle.

If productivity were high then one could expect that profitability would be high. However, we have seen that productivity is at its best during the recession phase and because of the over optimistic bidding that is invariably the case for the winner of a competitive bid, this will not necessarily be the case if the tender price was based upon a productivity expectation, higher than that achieved, or if the contractor is caught in a rising market. (Costs rising faster than productivity or the escalation formula)

All of the cyclical effects that are described in this Chapter will influence the profitability of construction companies in some way. Several aspects which relate to the scarcity of most resources during a prolonged upswing phase together with delays, rapid escalation and poor productivity, will put profits under pressure at a time when one would expect to maximise via the high levels of mark-up that can be achieved when competition is light.

(iv) Training

The fluctuating labour force situation, described above, also has an effect on training programmes which are designed to improve skills and increase productivity. In severe recessions most companies adopt the survival mode and abandon any form of expenditure which cannot produce immediate relief. At a later stage they simply cannot afford the expense of training. Jackson (1987) stated:

> *.....contractors have locked up their training schools and thrown away the key.*

All levels are affected, from tertiary education for managers, technicians and professionals to apprentice and general worker skills. Chalmers (1989) noted that training is the first item on which companies cut back during recessionary times. Lansley (1987) p. 149, commented on the demise of training in the UK throughout the 1970's, and in an article entitled "Death of the Craftsman", the British periodical 'Building' investigated the reasons behind the dramatic decline in the numbers of craftsmen in training. The authors, Guest and Steadman (1987) quoted the BEC as follows:

> *Clearly, the major factor has been the recession, which has meant that many employers do not have the confidence to enter into long-term training commitments.*

They quote figures to support this hypothesis which show a reduction in apprentice numbers of more than 50% between 1976 and 1985. Confirmation of the SA experience can be found in, Jacobsen (1986) and the BIFSA data, presented in **Table 5.3.**

TABLE 5.3 TOTAL APPRENTICE REGISTRATIONS PER YEAR IN THE BUILDING INDUSTRY 1979 TO 1991

YEAR	1979	1980	1981	1982	1983	1984	1985
TOTAL NO	454	839	1013	1257	1160	1386	1040
YEAR	1986	1987	1988	1989	1990	1991	
TOTAL NO	505	286	229	252	325	207	

This table indicates the change in the total number of apprentice registrations each year in building related trades in South Africa. It would appear that the change in numbers occurs in sympathy with the business cycle. The civil engineering sector have a training body, CEITS, and Eccles (1990) noted that the number of people in training in 1990, was 6000, some 55% fewer than during the period 1981 to 1984.

(v) Quality

The circumstances that apply to productivity and training, have a combined effect on the quality of workmanship produced by most companies. Hindle (1989), in listing the reasons why quality standards of new houses had declined, described the effects of the business cycle. The housing boom in SA in 1988 provided a demonstration of the declining quality standards due to the influx of untrained supervision and labour, the press had a field day, and Hood (1988) quoted Loy of the Cape Peninsula MBA who

confirmed that declining quality standards were a very real issue. Designers face similar problems. The fluctuations in demand create competition and with it, numerous problems, including retrenchment of skilled personnel. This has a major effect on the quality of service and level of detail that are produced, both of which directly affect the finished building project.

(vi) Contract period 'over-run'

The poor image of the building industry is often influenced by its' reputation for exceeding the contract duration and client budgets. They are a phenomenon most often experienced during the upturn and peak of the construction cycle, when all participants are affected by long delivery delays and poor quality of most resources, together with the problems of poor productivity described above. Kaminski and Mace (1989) were interviewed during a upswing phase of the business cycle that was not very steep or sustained, and they responded as follows:

> *Take the hypothetical example of a contract that was being done in 24 months five years ago. To-day that same contract cannot be done in 12 months. It can be done on 14 or 15 but not in 12. The industry is simply too stretched to cope with the demands being made upon it. This is a reality clients are going to have to accept, however unpalatable they might find it. I might add, that when I say the industry can't cope I'm referring not just to the main contractors but the professionals, subcontractors and the suppliers as well. Everyone's under pressure.*

This quote implies that shorter durations can more easily be met during a recession phase than in the recovery phase, when unskilled people and late delivery of materials is the norm.

(vii) Stress

For many of the companies and professional practices involved in construction stress and pressure are increased as a result of the extremes, ie. the effort needed to cope with

high volumes of work in an upturn and of surviving or coping with unemployment during a recession. This contributes to the numbers of people who decide to leave the industry, several of whom can be described as being affected by 'burn-out', they are not able to cope with the long hours and high levels of stress. (See Kaminski and Mace 1989)

(viii) Employee turnover

During a recession phase, retrenchment of employees at all levels occurs, at such times few employers have jobs to offer and those who are employed are careful because they wish to retain their jobs. At such times employee turnover is kept to low levels. However, employers are aware of the supply position and of their need to increase productivity to remain competitive, as a result the employees often feel that they are being taken advantage of and they will change to another company when jobs are available. At the beginning of an upswing phase those companies who are aware of the state of the economy and of the fact that demand for employees will soon increase, improve the remuneration package of certain employees and try to attract good staff and labour ahead of their competitors. Those companies who react late often find that their staff have been attracted to other companies, at this time high staff turnover can be anticipated.

5.2.4 EFFECTS ON THE INDUSTRY

Four basic types of effect are described here:

(i) Change in the number and sizes of companies

For many of the companies that compete in the competitive bidding market during a

recession, losses are so large and finance so difficult to obtain that they are forced out of business. Evidence of this is provided by Lansley (1985), Jacobsen (1986), Jacobsen (1987)a, Gutman (1989) and Brink (1988).

It would be logical to expect that the number of construction companies, active in a marketplace effected by a recession, would decline and this was found to be true by South (1984) who conducted a survey amongst medium to large sized companies during a downswing phase of the economy in the UK, and found that the number of firms reduced by an amount similar to the decline in demand. However, Ball (1988)(p.119), who also made a study of the UK industry, found that the overall number of companies did not reduce during a major recession because of the effect whereby the large number of staff and craftsmen who are made redundant as a result of companies adjusting to reduced levels of turnover, become self employed by forming smaller companies. Indeed, the change in size of companies, in terms of numbers of employees, is a significant factor. Large and medium companies become smaller but the data is not displayed here because it has been distorted by another phenomenon, the movement towards a greater use of subcontractors. (see the subcontractor section 4.2.2)

There is much evidence to show that companies and whole sectors reduce in size. A review of industry journals published during periods of recession will provide many examples, Hudson (1987) speaks of consolidation within the largest construction company in South Africa. SAFCEC (1986) reported a 10% shrinkage in the civil contracting sector during the twelve month period ending June 1986. Reduction can be by choice as in the case when companies close down branches or sell-out to others, some just close their doors until conditions improve, or it may be involunary as in insolvency.

Fraser (1989) stated:

> *In my opinion it may be the more efficient contractors and employees who either choose to leave the industry or seek rationalisation through frustration at low returns on investment and effort.*

The converse of the effects described above is found when the cycle is in a prolonged upswing phase, companies grow in size and many new entrants are to be found. Many of the new entrants are not qualified or educated in terms of the technology of construction or of managing such a business, they are most often found in the low-tech sectors such as house building. (See Hood 1988)

(ii) The movement of companies across traditional trading boundaries

Lansley and Quince (1981) noted that companies that had specialised in private housing, education or systems building, for example, had broadened their markets rapidly when faced with a major recession in the United Kingdom. Francis (1988), commenting on the state of the British civil engineering sector stated:

> *The construction industry in the UK has become totally multi-disciplinary and I can't think of a single major contractor who only does civil engineering.*

In South Africa the civil engineering sector has declined more than building construction in recent times and this sector has responded in much the same way as their British counterparts. Jarvis (1990) reported on the progress of the company, Basil Read, which had achieved growth by moving into building construction and house building.

(iii) Break-down of unity

Most building contractors are members of an employer organisation, such organisations are intended to provide them with a single body that can speak and negotiate on behalf of the whole. Set rules of conduct and standards of performance that will enhance the image of the industry and benefit each member. However, the fluctuations in volume of work on individual companies creates pressures that cause companies to act contrary to the rules during both the recession and recovery phases. During the recession

members break rank to find customers and in the recovery, they break rank to compete for scarce resources:

Poaching of labour

Those industry employees who were retrenched or resigned during the recession phase and who did not start their own contracting or subcontracting concerns, often find jobs outside of the industry, particularly those who have suffered retrenchment previously. When an upswing comes there are too few skilled people for the positions on offer and employers offer increasingly higher salaries and wages to secure the people that they are becoming desperate for and in this way, the wage 'spiral' is begun. At these times employer organisations such as the MBA, spend a great deal of time in following-up complaints about poaching of staff and labour. They send out notices to members advising them that they have created by-laws which prohibit members from poaching staff and, in certain areas, they prohibit the use of wage rates in media job advertisements.

Kaminsky (1988), in an interview for S. A. Construction World, stated;

> *We've traditionally been very successful in attracting, and keeping, top-line engineers and managers. But just of late we've lost several staff members. For Ovcon, particularly here in the Cape, to lose people is unprecedented since we're a happy company and our salaries have always been very competitive. Clearly many contractors are desperate for staff.*

Head hunting is the name of the game, sending recruiting agents to make employment offers to targeted individuals even though they have made no indication of wanting to relocate previously. The remuneration package must be good in these instances, and this is another factor that leads to increased employee turnover and an escalation of costs in the upswing phase. Parkyn (1988) commented on the emergence of the headhunter in the UK during a building boom.

Unfair competition

In order to prevent members from being exploited by unscrupulous clients and consultants and to prevent in-fighting, BIFSA, through the various MBA's attempted to enforce a number of by-laws, some of which have recently been changed to suit the Monopolies Act. These by-laws included such things as a ban on competing on time, negotiating with more than one contractor at a time, competing with non members and the submission of fixed price bids. In periods of prolonged recession many of these rules were broken by members who were desperate for customers.

Another aspect of unfair competition that is prevalent during periods of recession is the treatment of subcontractors which was mentioned above. This has been one of the main reasons why a great number of subcontractors have broken away from BIFSA and the MBA's to form a new employer organisation as have the small builders in the Western Cape. These are clear signs of fragmentation.

(iv) Research and Development

Several references have already been made to the effects of fluctuating demand on research, notably by Eccles (1990). Thake (1974) claimed that the high risk nature of industry, together with its characteristic separation of design have an inhibiting effect on research and development.

(v) Image of the industry

The accumulated effects experienced by individual companies impact on the industry as a whole, these can be summarised as follows:

During the recession phase

* Skilled and unskilled employees made redundant.
* Skills decline as a result of a lack of training.
* Research declines due to a lack of funding.
* Technology stagnates due to the lack of research and investment in new systems, plant and equipment.
* Contractual claims and aggressive contracting result from fierce competition and harsh contract conditions.
* The interface with clients and consultants deteriorates as competition and aggressive contracting grows.
* Subcontractors are abused by contractors.
* Manufacturers buy out competitors to form cartels and monopoly supply situations.

During the recovery phase

* Poor quality of product due to lack of training and numbers of tradesmen.
* Late delivery of products due to scarce resources and poor productivity.
* Price of building increases faster than general rate of inflation due to restraints in recession phase being passed on late and the effects of poor productivity and scarce resources.

Regardless of recession or recovery the industry image is seen to suffer and this has the effect of creating an impression amongst the public that this is a poor industry with regard to investment and career choice. Clients also look to the consultants to protect them from the 'barbarian builders'.

5.3 SUMMARY AND CONCLUSIONS

5.3.1 SUMMARY

* Some of the effects of a fluctuating workload upon construction contractors and the industry as a whole, have been shown here. They have been shown to have an effect on three construction related elements, the trading environment, the industry and individual contractors. These effects have been summarised and presented in two Tables, one for the recession phase of the business cycle **Table 5.4**, and one for the recovery phase, **Table 5.5**. These Tables can be treated as models because it can be seen that all of the effects are interrelated. When the business cycle moves into a new phase, it triggers a series of events that follow, one from another.

* The severity of these effects will depend upon the amplitude and duration of the recession and recovery phases of the business cycle.

* It has also been revealed that the risks in a project will vary and shift from production to sales and back, depending upon the phase of the business cycle.

5.3.2 CONCLUSIONS

It became apparent, whilst involved in the analysis of the data and preparation of Tables 5.4 and 5.5, that there are two levels of 'effects' that can be classified as either 'Primary' or 'Secondary' effects. This can be determined in terms of their influence on individual construction companies and tested in the following way, if the primary effects were to be overcome, the secondary ones could be avoided.

TABLE 5.4 THE EFFECTS OF THE RECESSION PHASE OF THE BUSINESS CYCLE ON THE CONSTRUCTION INDUSTRY

THE ENVIRONMENT	THE COMPANY	THE INDUSTRY
LOW DEMAND		Numbers of companies declining
↓		↓
Competition for clients INCREASING	Turnover reducing	Insolvency and buyouts common
	↓	
	Companies shrinking	Unemployed form small firms & Labour-only subcontracting grows
	↓	
	Mark-up not covering cost	
	↓	Housing/civils/system builders move into general contracting
	High risk projects attempted	
	↓	
Competition for resources DECREASING	Profit potential declining	Image of the industry damaged
↓		
People	Redundancy - unproductive 1st	Unprofitable
↓	↓	Unstable employment
Plant & equipment	Only productive people retained	
↓	↓	Lack of unity between
Subcontractors	Supervision ratios improve	contractors and employer
↓	↓	bodies - new ones formed
Materials	Low employee turnover	- fragmentation -
↓	↓	↓
Plant closures & stockpiles	Quality standards improve	
↓	↓	
Surplus resources & waste	Short term productivity gains	
	Training programmes abandoned	Skills level declining
	↓	↓
	No investment in new eqipment	Research declines
	or research - plant sold-	↓
Consultants compete for clients		Technology stagnates
	Contract conditions 'harden'	↓
	↓	Contractual claims abound
	Contract durations shortened	↓
		Aggressive interface - Client/Consultant/Contractor
	Apparent CPAP over recovery	QSs say payments unfair
Manufacturers/Subs/Suppliers compete for customers	Aggressive price bargaining	Subcontractors abused
		Manufacturers form cartels & monopolies
High stress	Skilled people seek stable employment	Potential recruits look elsewhere

TABLE 5.5 THE EFFECTS OF THE RECOVERY PHASE OF THE BUSINESS CYCLE ON THE CONSTRUCTION INDUSTRY

THE ENVIRONMENT	THE COMPANY	THE INDUSTRY
HIGH DEMAND		Numbers of companies increasing
v		v
Competition for clients DECREASING	Turnover increasing	Unqualified entrants attracted
v	v	
Conditions of contract easing	Companies expanding	Clients/Consultants/Contractors ready to talk but all too busy to formulate change
	v	
	Mark-up increasing	
	v	
	Low risk projects chosen	Companies specialise in own sector, housing/civils/etc. 'stick to the knitting'
Competition for resources INCREASING	v	
	Profit potential increasing	
v		
People	Skilled people scarce	Headhunting and other unethical methods of acquiring resources in use
v	v	
Plant & equipment	Unskilled people recruited	
v	v	v
Subcontractors	Low supervision ratios	Lack of unity between contractors
v	v	
Materials	High employee turnover	
	v	Skilled people retrenched in recession have not returned - loss to the industry -
	Training programmes activated	
	v	
Related sectors overstretched	Quality standards declining	
v		
Designers	Restricted choice	
v		
Manufacturers	Shortages	Image of the industry damaged
v	v	
Suppliers	Delays and loss	Poor quality
v	v	
Subcontractors	Projects overrun deadlines	Late delivery
	Costs increasing faster	Prices rise faster than
Spiralling prices	than CPAP (under recovery)	inflation rate.
	v	Low productivity
	Productivity declining	
	v	Profit performance
	Profit targets not met	
High stress	Skilled managers burn out	Potential recruits look elsewhere

However, it must also be recognised that certain of these effects apply to the environment in which construction companies exist and are beyond the control of individual entrepreneurs and managers, whilst others could be said to occur as a result of the their failure to deal with the primary effect.

* The primary effects must be, the level of demand for buildings and its influence on the competition for customers and for resources. The methods used by a particular company to overcome them, and their degree of success, will determine the extent to which that company will be affected by the secondary effects, the main ones being, the level of turnover, mark-up and profitability, the level of productivity, standard of quality and level of training. There are more, and these are summarised in Table 5.4 and Table 5.5.

* It would seem that the industry responds in the same way, each time that there is a recession or a prolonged recovery phase. No doubt individual managers who have experienced two or more of these extreme periods will be aware of the symptoms and will take steps to avoid the worst effects when the next such phase is imminent but very few companies do this effectively. This could be a factor of the life span of the chief executive officers (perhaps five to ten years in power on average) or possibly, the effect of the number of new entrants (companies) into the industry between such periods, or, that they simply have not found an answer to the problem.

* It can be concluded that, in order to manage a construction company effectively, managers must be aware of the movements of the business cycle and its likely effect upon their company and its environment. This could be achieved if the responsible persons had gained an understanding of this model.

* The practice of blaming the cyclical fluctuations on the demand for buildings, on the Government, and asking them to take responsibility for the sad state of the industry, is perhaps attributable to a lack of understanding of strategic management principles. Kilian (1976) showed that the Government is the biggest single construction client but that it is in the private sector where the greatest amplitude was found, more than twice that of the public sector. The trend over the past five years has been away from Government spending, towards privatisation, resulting in growth in the private sector. Therefore, it would be more appropriate for the industry to expend time and effort on research into methods and techniques which could allow companies to cope with, or manage, the effects of the business cycle. Attempts to convince the Government to invest in buildings in a contra cyclical manner, or at least to maintain an even level of investment, could continue but should be seen to hold little hope of succeeding, given the lack of success in other countries.

* The basic effect of fluctuating demand is one of constantly changing conditions and circumstances.

THE SECOND SUB HYPOTHESIS

The second Hypothesis was stated thus:

The greatest effect of fluctuating demand is its effect on the degree of competition amongst contractors which, in turn, will affect turnover, profitability and several other key aspects of the trading environment relative to the stage of the business cycle.

The data presented in this chapter provides conclusive proof of the accuracy of this hypothesis.

PART TWO

CONSTRUCTION COMPANY SELLING METHODS

AND

THEIR PERFORMANCE AT VARIOUS STAGES OF THE BUSINESS CYCLE

CHAPTERS 6, 7 AND 8

CHAPTER 6

REVIEW OF RELATED LITERATURE

KEY WORDS:

Building Procurement Systems

Contract Procurement

Contractual Arrangements

Contract organisation

Bidding Strategy

Tendering Strategy

Response to Change

Marketing of Construction Services

Pricing Systems

6.1 INTRODUCTION

This chapter has been included to establish a contextual background and to explain some of the confusing terminology which is used by people in the construction industry.

A review of the literature which is related to the contents of Chapter Seven, 'Selling construction company services - systems in use', and Chapter Eight, 'Changes in demand for buildings and the performance of sales systems for construction companies', will be undertaken.

6.1.1 TERMINOLOGY

Clarification of certain terms is required because of the number of differing ones that have the same meaning:

Estimate: to calculate the probable cost of a service or product in advance. Because each construction project is unique, the estimate will contain some guesswork.

Tender: estimated price offered in competition.

Bid: estimated price offered in competition.

Tendering and Bidding: are used to describe the same activity.

Building Procurement Systems: See Chapter 7 section 7.1.1

6.2 DESCRIPTIVE LITERATURE

This section is concerned with the various technical aspects involved in the building procurement systems, marketing and selling construction services.

6.2.1 BUILDING PROCUREMENT SYSTEMS

Most of the literature concerning Building Procurement systems has been written by Architects and Quantity Surveyors from their perspective as consultants to a client who wishes to purchase a building.

The Aqua Group (1975) produced one book, in a series written for architects and quantity surveyors, entitled "Which Builder? Tendering and contractual arrangements", in which they described a number of arrangements:

Competition and negotiation
Fixed price
Cost reimbursement
Target cost
Two stage tendering
Continuity contracts

Nahapiet and Nahapiet (1985) compared the contractual arrangements for building projects used in the U.S.A. and U.K. They concluded that it is unlikely that there is one 'best form of contract for building projects. It would seem to vary according to the particular circumstances of the project concerned, particularly, the type of client, time and cost requirement and the characteristics of the project. The contractual arrangements which they compared were:

Lump sum
Negotiated contract
Construction management
Management contracting
Design build

Collier (1987) recorded the types of contractual arrangements in use in the U.S.A. whilst approaching the topic in a more analytical manner. He stated that two methods exist, as a means to arriving at a contract price: 'bidding' and 'negotiating'. These can be used with a variety of owner/contractor/designer/manager configurations and a variety of contractual arrangements. Typical configurations include:

Turnkey/Package deal
Management contracting
Construction management
Project management

Skitmore and Marsden (1988) conducted research intended to help construction clients, by simplifying the choice of building procurement systems. They found that certain systems were more appropriate than others, depending upon the clients specific requirements. They used the following systems:

Negotiated traditional
Develop and construct (competitive)
Negotiated design and build
Management contracting
Turnkey contracting

Kirton (1989) followed in the footsteps of Skitmore and Marsden by applying one of their tests to build a procedural model for project procurement selection in South Africa. He used the following systems:

Traditional
Package deal
Design and build
Construction management
Project management

The definitive work on procurement systems by Franks (1990) provides a description of the procurement systems in use in the United Kingdom at the present time. It sets-out all of the main methods in use and provides a brief explanation of each together with a large bibliography on the subject. The building procurement systems dealt with are:

Traditional
Fast track
Two stage tendering
Management contracting/construction management
Package deal/design and build systems
Project manager/clients representative
British property federation system

There are numerous books which describe in detail the procedures involved in the various procurement systems, most of those to which the writer will refer are quite new, because it is only recently that change in the methods by which United Kingdom contractors find work have occurred and even more recently described in books. The National Economic Development Office in the UK, (NEDO) produced an excellent booklet which is intended to explain the different 'Procurement Paths' to prospective clients and it places them in perspective and provides a chart which indicates the best system for a variety of client requirements. These are described with each building procurement system described below.

(i) Traditional Building Procurement System

Usually understood to mean the system whereby the architect is appointed as the principle agent and, together with the design team, produces drawings, schedules, specifications and a bill of quantities (full documentation) When this has been achieved a contractor is 'selected', using the competitive bidding method. Bids are called for from building contractors who are asked to price the work on a lump-sum basis. This can be done as 'open' \'public' or 'closed' \'invited' bidding, and the contractor who submits the lowest bid will, most often, be awarded the contract to build. **Figure 6.1** is a diagrammatic explanation of the contractual relationships that are typical for this method.

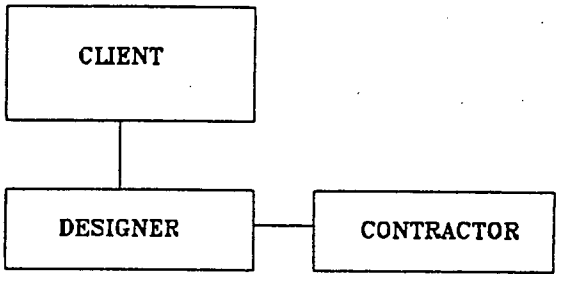


FIGURE 6.1 RELATIONSHIP OF PARTIES IN TRADITIONAL BPS

(ii) Project management

This term is used universally but may be used to describe different things to different

persons. It is used here to describe the overall planning, control and completion of a project from inception to completion aimed at meeting a client's requirements and ensuring completion on time. As CIOB (1988)a The project manager is an independent agent who is engaged by a client to manage all of the activities involved in building procurement. It is generally accepted that it was invented and first used in the U.S.A. and was introduced into British construction in the early 1970's and South Africa in the late 1970's. This is a system which uses the services of a skilled manager to take over the architects management function in the traditional procurement system. The Project Manager is an agent of the client who co-ordinates and manages the whole procurement process no matter which contractor selection system is used. **Figure 6.2** indicates these relationships.

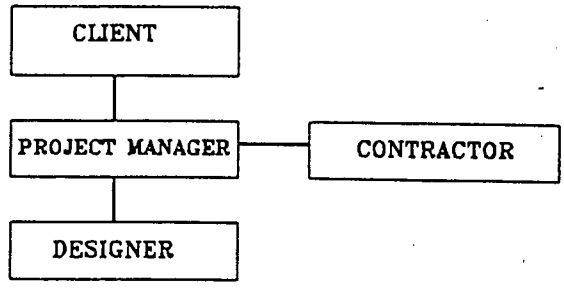


FIGURE 6.2 RELATIONSHIPS IN PROJECT MANAGEMENT

(iii) Management Contracting/Construction management

Franks (1990) p10, described the close similarity and confusion which exists between these two terms, Dearl and Henderson described them both as separate 'arrangements' which can be referred to as 'Management Contracting'. These two arrangements are illustrated in **Figure 6.3** and because of the similarity between then they will be treated as one system in this dissertation. Although Management Contracting\Construction Management have been used in the

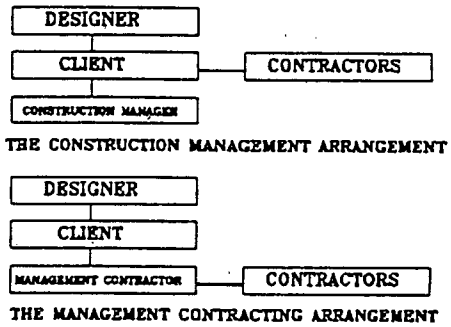


FIGURE 6.3 RELATIONSHIPS IN MANAGEMENT CONTRACTING AND CONSTRUCTION MANAGEMENT

U.S.A. and the U.K. for many years, first used in the U.K. in the late 1960's (CIOB 1983), they are not yet in general use in S.A. Winton (1989) of Old Mutual Properties wrote an article in which he advocated it's use. Essentially, these methods place the contractor in the role of a consultant to the client in much the same way as the other consultants including the designer. The following definition is provided by Barrie and Paulson (1976) p.425:

> *In management contracting a contractor performs a management function under a professional services contract with a client. The management contractor is paid a fixed fee based on the value of work. As the construction professional on the construction team, the management contractor works with the designers and the client, from the brief through to completion of construction, providing leadership of the construction team and on all matters relating to the production of the building with particular regard to time and cost.*

(iv) Design and build/Turnkey/Package deal

Though there may be differences in the extent of service that these terms describe, notably, finding sites, securing finance and possibly other services such as letting or selling space. however one thing that they do all have in common is that the contractor is responsible for the project from beginning to end including design and construction. A 'one-stop' service is offered by contractors, clients have only one entity to hold responsible rather than several using other BPS'.

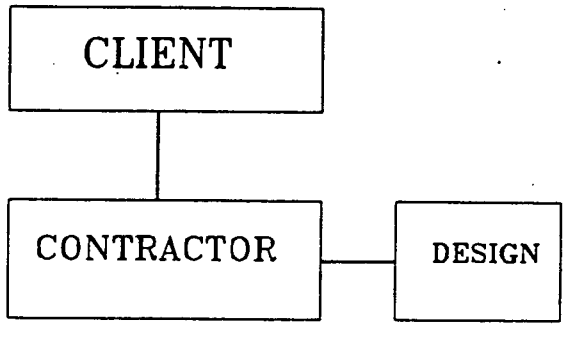


FIGURE 6.4 RELATIONSHIPS IN DESIGN AND BUILD

Figure 6.4 indicates the relationships between parties when independent designers are used, however, contractors who specialise in this construction selling method often have in-house designers. It is also used in conjunction with the competitive bidding selection system, the procedures are

described by CIOB (1988) This method has been used successfully in S.A. One such project, the Zanvliet Sewage Works near Cape Town, was featured in the July 1989 edition of "S.A. Construction World" and fully described by Krige (1991).

(v) The British Property Federation System (BPF)

The BPF is a client body, much like SAPOA, who have put together a practice manual aimed at changing many of the traditional ways that activities in the building procurement system are conducted. It sets out to facilitate good building practice more quickly and at lower cost. BPF (1983). In essence it entails the appointment of a clients representative much as in project management, who will manage the whole process along the lines of the BPF manual, BPF (1983).

6.3 CONTRACTOR SELECTION SYSTEMS

There are two basic contractor selection methods, 'competitive bidding' and 'negotiating'

(i) Competitive Bidding

The term 'tendering' is often used in place of 'bidding', but the latter will be used throughout this dissertation.

So much has been written about the advantages and disadvantages of competitive bidding that it would seem pointless to describe it here, However, Collier (1987) provides an excellent explanation and analysis of the various options. The South African point of view is provided by, Vorster (1977) and Cattell (1984).

(ii) Negotiating

Much has been written about the advantages and disadvantages of negotiating contracts mostly, by quantity surveyors, see Sweett (1971), Rouse (1974), Schneid (1983), Chapman and Webb (1983). Negotiated sales are the preferred choice of the major construction companies in S.A., the largest of which, Murray and Roberts were featured in the S.A. Construction World when the MD of their Cape Town company was moved to Johannesburg. Fraser (1984) was interviewed and indicated that he was expected to repeat his success with negotiation in the new area, he said:

> *M&R Building (Cape Town) has always been very successful with negotiated contracts and will obviously be in a position to pass on it's expertise in this area.*

The chief executive of the same company, interviewed by the press after publication of the 1988 mid year results, Brink (1988) stated:

> *We are as full as we want to be. Most of our work is negotiated - we are not having to slug it out in the tender market.*

However, very little has been written about the principles and techniques of negotiating a construction contract, Collier (1988). Flanagan and Norman (1989) have devoted a section of their paper to negotiation and conclude by stating that the benefits to a client will be a combination of price, delivery and other more subjective measures of quality. They also measured risk relative to a number of contractual arrangements, **Figure 6.5** is adapted from their paper.

CONTRACTUAL ARRANGEMENT	CLIENT RISK				CONTRACTOR RISK			
DESIGN BUILD					X	X	X	X
LUMP SUM FIXED PRICE				X	X	X	X	
LUMP SUM FLUCTUATING PRICE				X	X	X	X	
SCHEDULE OF RATES			X	X	X	X		
MANAGEMENT CONTRACTING			X	X	X	X		
COST PLUS -DAYWORK BASIS	X	X	X	X				
CONSTRUCTION MANAGEMENT	X	X	X	X				

FIGURE 6.5 DISTRIBUTION OF RISK FOUND WITH TYPE OF CONTRACTUAL ARRANGEMENT
Adapted from Flanagan and Norman in Hillebrandt and Cannon (1989)

6.4 CAUSE AND EFFECT OF CHANGE WITHIN THE INDUSTRY

Several papers, books and reports have been published in the United Kingdom in recent years. Some commissioned by the government and others by industry bodies, to look into reasons why the industry was said to be slow, when compared with other countries. All of them showed that the industry has changed in many ways since 1970, most of all in the usage of innovative building procurement systems and the move towards subcontracting. These are listed here in chronological order:

- Organisational response to a major recession, Lansley and Quince (1981)
- Faster building for industry, Building EDC (1983)

- Response to change - the development of non-traditional forms of contracting, Moore (1984)
- The management of construction projects. Nahapiet and Nahapiet (1985)
- Corporate strategy and survival in the U.K. construction industry, Lansley (1987)
- Rebuilding construction: economic change in the British construction industry, Ball (1988)
- Faster building for commerce, NEDO (1988)
- Building Britain 2001, CSSC (1988)
- The modern construction firm, Hillebrandt and Cannon (1990)
- Challenge and innovation: The challenge to the construction industry, Gale and Fellows (1990)

6.5 CONCLUSIONS

Most of that which has been written about the process of buying buildings and selling the services of those involved in the process has been written by those people who make their livelihood by selling their services as independent designers, coordinators and consultants to customers who require 'bespoke' buildings. These people have a vested interest in the maintenance of the building procurement system, which has been termed the 'traditional' system, and because of this have effectively stifled innovation in respect of new methods of building procurement and specifically alternative methods by which construction companies can approach customers and sell their services. Hamilton (1987) support this view, by virtue of his finding that there was no single person or knowledge 'czar' who was fully conversant with all of the building procurement systems, even though he consulted several'experts'.

In recent years, a special breed of economist has evolved, they are known as building economists, and they have analyzed the practices and procedures involved in the systems of building procurement and building delivery. In the early years they simply

held a mirror to the industry, later they began to pose the question, "why are things done this way?" In recent years writers such as Ball (1988) and Hillebrandt and Cannon (1990) have conducted surveys of construction companies and found a new awareness of marketing and sales techniques.

Contractors themselves have confined their writings to matters technical and mostly practical, which is quite understandable, given that their education and training was, until recent years, concerned only with the technology of the construction process. It may also be, that certain managers in the industry do have a body of knowledge which is passed on by word of mouth and not recorded because of its value in creating profitability for companies who are active in a very competitive market.

All of these factors have lead to a situation where, it would seem, a huge blind spot has been created, or at least development has been retarded. As a result, very little information has been written about the methods by which building contractors can sell their services or products. Only one reference was found in this literature search, to the word 'sale' used in the construction context. This reference was found in the most recent book by Hillebrandt and Cannon (1990), not even in the books on construction marketing were references found, since, they seem to have been written to explain the concept and procedures involved in the marketing rather than specific techniques that apply to this unique industry, as in Fisher (1986) and Jepson and Nicholson (1972).

Perhaps, as has been suggested by Hillebrandt and Franks, finding customers had been easy for contractors in Britain and South Africa between the great depression of the 1930's and 1973 when the first oil crisis occurred. Certainly, the proliferation of papers, reports and books on the subject of 'change' within the industry has resulted from the severe recessions and decline in construction activity which began in the 1970's. Part of this change is to be found in new methods of building procurement and specific selling techniques used by contractors, such as 'Turnkey'. Whilst these methods have been described and analysis attempted by the Aqua Group and Franks, they have approached the subject from the perspective of the client not as a contractor.

CHAPTER 7

SELLING CONSTRUCTION COMPANY SERVICES AND PRODUCTS

Selling is a complex business in the construction industry, partly due to the uniqueness of the product but also to the fact that it is inherently difficult to locate and influence each prospective client. Hillebrandt & Cannon (1990).

7.1 INTRODUCTION

In this chapter we will consider sub-problem No 3;
Can construction companies choose the system that will be used when selling their service or product?

The market in which the medium to large general contractor trades, is that where their customers require a purpose made (bespoke) building. The traditional way in which this is achieved is as follows; the client engages designers (architect and engineers) and a cost consultant (quantity surveyor) who offer to control the elaborate procedures that are involved (building procurement systems). When the design has been developed and documented, a contractor is selected.

This traditional system places the contractor in a passive role which can be likened to the method by which consumable goods are sold when they are simply placed on a shelf awaiting a customer who will choose from a variety of products.

It must be clear that this passive role leaves very little scope for the contracting company to promote its services and it is for this reason that Bell (1981) found contractors marketing skills to be reactive rather than proactive.

In the sections that follow the writer will explain the building procurement systems in use, show that changes have taken place, describe the methods that have recently evolved and show how certain methods or systems can be used by contractors to achieve a 'sale'.

7.1.1 TERMINOLOGY AND DEFINITIONS

Before proceeding to describe the methods some clarity is needed with respect to the terminology in use at the present time.

Be it as buyer or seller in the construction market, each is faced with a complicated task. One which has necessitated the design of specific systems, intended to ensure that the task is carried out effectively. The terminology which is used to describe these systems can be confusing, for instance, the term which is said to describe the various arrangements which may be used by a construction client when buying a bespoke building is, 'building procurement systems'. This term is most popular in Britain and South Africa at present but it is not the only term in use, the following list indicates the variety of terms that have been used to describe those procedures;

Methods of contracting	AIQS (1975)
Contractual arrangements	Aqua Group (1975)
Contract organisation	Building EDC (1983)
Forms of contracting	Moore (1984)
Building procurement system	Franks (1984)
Building delivery systems	Nahapiet & N (1985)
Project organisation	NEDO (1988)

Procurement strategies	CIOB (1988)a
The process of construction	Hillebrandt and C (1990)
Procurement path	NEDO (1983)

This list would seem to indicate a degree of confusion or, at least, that the terminology needs to be rationalised. (A M.Sc. thesis is presently in preparation at the University of Salford, UK, which is entitled "An analysis of terminology used in the procurement of building work")

The Concise Oxford Dictionary defines the term 'procure' thus;

> 'obtain by care or effort, acquire, bring about'

Franks (1990) p.xiv, defined procurement, thus;

> *Procurement is the amalgam of activities undertaken by the client to obtain a building.*

However, he has not made it clear that this is not simply the buying of an existing building, though his description of the procedures involved leaves little doubt that he is referring to a custom built building that did not exist prior to the commencement of the procedures.

The term 'building procurement system' is used by most academics to describe the process by which a building is designed and constructed to suit the requirements of a specific client or buyer. It has also become standard practice to use the word procurement when referring to the efforts of construction contracting companies who are attempting to secure new contracts, though the term may be varied as in 'procurement of construction contracts', see, Li Hang Han (1986). However, in the writer's opinion, the same term cannot be applied to both contractor and client because on the one hand, the client is expected to pay for his building whilst on the other, the contractor is expecting to be paid.

When building contractors use the word 'procure' they are referring to the act of obtaining resources, particularly materials and the services of subcontracting companies, for the assembly of buildings. The 'Buyer' of old is now known as the 'Procurement Officer' in many companies.

Contractors do not procure buildings, they sell them or sell their service, that of managing the process of assembly of the components, which will form the required building. This is carried out at a price.

Collier (1987) when referring to the client and his contractor stated:

> *These are the two most obvious, fundamental and essential functions in construction: those of buyer and seller.*

So what term can be used to describe the activity that will result in the sale of the contractor's service ? Terms such as 'Tendering' and 'Bidding' are familiar but these refer only to the offering of a price for the service that a contractor provides. If this tender or bid is accepted, a contract is entered into, the term 'winning a contract' is used and could be a relevant term when we are using the competitive bidding system. However, construction is no different than any other business, contractors have services and products on offer, and to stay in business they must make a 'sale'.

Gray and Flanagan (1989) whilst viewing building procurement systems from the contractor's position, described them as 'standard contracting methods' and 'contractual options'. However, it can be seen that these terms do not describe the method by which the contractor achieved a sale but the method by which the sale agreement is structured.

Clarity may be gained by refering to **Figure 7.1** which displays the arrangement of certain activities in the traditional building procurement system and to describe the terms that have been used in this dissertation to describe them.

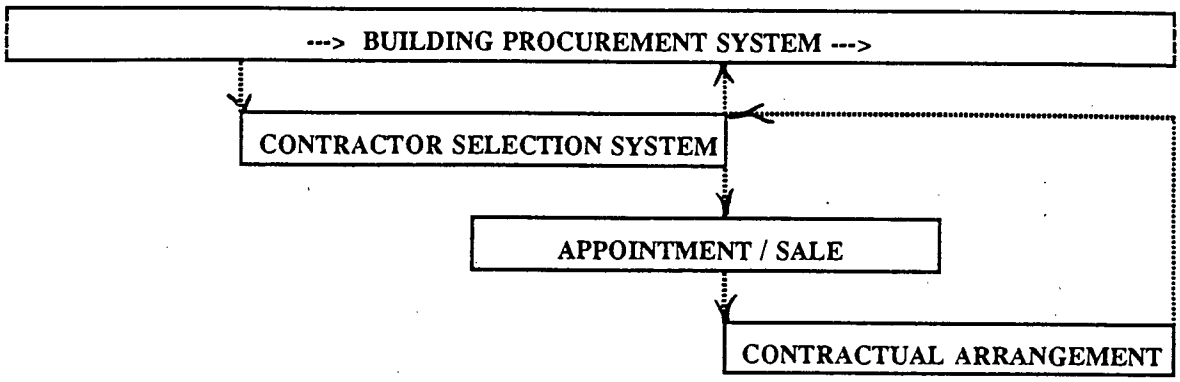


FIGURE 7.1 THE CONTRACTOR SELECTION ACTIVITIES CONTAINED WITHIN THE TRADITIONAL BUILDING PROCUREMENT SYSTEM

Definition of terms used in Figure 7.1:

Building procurement system:

the system that encompasses all of the procedures involved, from client enquiry to building delivery.

Contractor selection system:

the systems used to get the contractor and client to the point of sale. (within the BPS)

Appointment/Sale of service:

contractor accepted and services employed / contractor has made a sale for a service still to be performed.

Contractual arrangement:

the agreement of sale. Type of contractual arrangement entered into by the contractor.

If one accepts that normal business principles and terminology may be applied to construction and that the 'seller' is free to 'market' the product or service, even to 'initiate' the 'sale', then it would not be unreasonable to suggest that these activities be described as, Construction Contractor Selling Systems (CCSS).

7.2 TRADITIONAL BUILDING PROCUREMENT AND CONSTRUCTION CONTRACTOR SELLING SYSTEMS IN USE (BPS AND CCSS)

The South African construction industry is organised in much the same way as the British industry. This is a natural result of influence gained during the period when South Africa was a part of the British Empire. In order to understand the reasons why the South African construction industry functions as it does, we must look to the ways in which the British industry was shaped.

In the late seventeenth and eighteenth centuries, as a result of the industrial revolution, fashionable architects gained fame and fortune. They were fully occupied by design and for most, the building process was seen as a waste of valuable time, and they grew away from their roots as designer builders or craftsmen. In 1831 the Architectural Society was founded and was followed in 1837 by the Royal Institute of British Architects which gained support by seeking designers free from association with the building trades. In 1887 this idea of separation was enforced by the charter of the R.I.B.A. and further enforced by the Architects Registration Act of 1931. The consequences of this are explained in detail by Bowley (1966) but, in short, these events separated design from construction and consolidated the architects position as an advisor to clients who required the construction service. In this influential position the architects formulated procedural systems which ensured that they controlled the building procurement process and the point of sale for contracting companies, employers in all but name. As a result of this, contractors were placed in a subservient position. They were not required to develop marketing or selling skills, other than those which might gain favour with the architects.

7.2.1 TRADITIONAL CONTRACTOR SELECTION SYSTEMS

The traditional building procurement system, described in Figure 7.1, can

accommodate a number of different contractor selection systems. This section is concerned with those which are considered to be traditional.

There are two basic methods of reaching a price for the services of a building contractor:

(i) by getting competitive bids, and

(ii) by negotiating a price.

(i) COMPETITIVE BIDDING

Competitive bidding is the most frequently used method for a contractor to be selected or for the building contractor to achieve a sale. It is used by customers and their advisors to obtain the lowest initial price for the work to be undertaken. Contractors are invited to tender a price, or submit a bid, and providing that they need work and are satisfied with the contractual conditions and consultants, they will calculate a price and submit it on a tender form. To obtain the procedures in full see Collier (1987).

There are two basic types, or methods, of structuring the bidding system: (i) the 'open bid' and, (ii) the 'closed bid'. The latter is more commonly known as the 'selected' or 'invited' bid. Two other bid types are described but they are simply arrangements which use the open or closed bid system as a means to achieving a particular contractual arrangement and are described here for the sake of clarity.

Open bidding

The word 'open' indicates that anyone can bid but there are usually a few minor qualification requirements, most often a performance bond and a licence. The invitation to bid is usually advertised in the news media and, in general, the lowest priced bid will be the successful one, particularly for public sector work.

Closed bidding

This term indicates that the tender is not open to all. A limited number of contractors are selected on some basis that best suits the clients needs. Usually the contractors are happier with this arrangement because they will be competing with contractors with similar capabilities and skills and not with incompetent contractors who are notorious for winning contracts by virtue of making the biggest error in their price calculation and thus wasting the time and effort of those who have competently calculated a price.

Two stage bidding

This third arrangement is most often used as a method of selection or elimination in a contest to find a contractor with whom to negotiate a final price. Often used when the level of information is low and the basis upon which to negotiate is weak.

Serial bidding

Simply a bid for a service that will be repeated, for example, a substation for the electrical distribution authority of which there are a number to be built in various places. The selection process taking place only once and the contractor bidding to build them all.

(ii) NEGOTIATION

A system whereby the client and a contractor bargain with each other in order to reach a mutually agreed price for a specific project. It is used less frequently than competitive bidding because there are no standard procedures and there are few

publications for reference and guidance, Collier (1986) and Flanagan and Norman (1989) analyzed and described the appropriate use of the various contractor selection systems. The 'negotiation method is seldom used in the public sector because it is considered that there is less likelihood of public servants resorting to favouritism or 'graft' if the open bid method is used. It may also be less popular because it requires a lot of effort but it has the advantage of taking less time and can be conducted with a lower level of documentation and detail than a competitive bid. Another advantage that has been found is the good working relationship that is built-up and usually maintained throughout the contract period, between the client and the contractor.

7.2.2 TRADITIONAL CONSTRUCTION CONTRACTOR SELLING SYSTEMS

The contractor selection systems described in 7.2.1 are also systems by which contractors can sell their services. All construction companies must develop the skills of finding the sources of open bids and preparing an estimate or 'selling' price in the format required by the bid documentation. A large body of knowledge exists concerning the procedures and skills required by both client and contractor involved in this system.

There is a second group of contractors who are more conscious of the need for marketing. They have developed other skills which are used gain entry or to qualify for that market where they are invited to participate in closed bids and negotiated sales.

There is a third group of contractors who can be termed as 'pro-active'. This group use these same systems but in innovative ways that can give them a unique competitive advantage.

Negotiation - Innovative Role

This method may be used in a way that will guarantee a reduction in the number of competitors. Up to this point we have considered only the situation where contractors are invited to negotiate but it can be, and has been, used by contractors who have initiated the negotiation with a client, usually before the client has made contact with designers or quantity surveyors. In this way the contractor may recommend specific designers and quantity surveyors and follow the traditional building procurement system, or negotiate a package deal/design and build/turnkey type of deal. No specific instances have been found on record but the author has been involved in a number of such situations. Hillebrandt and Cannon (1990) referred to it, p.65. and one graphic example that is often quoted is the building contractor who maintains a watchful eye for large fires which destroy buildings, following which events, and before the smoke has drifted away, he contacts the owner and offers to rebuild in the shortest possible time.

Selling products

It has long been the practice of construction companies to build properties during recessionary periods, as an investment and in order to keep their resources usefully employed at such times. This is a form of property development, and it means that the contractor must play a dual role, that of both client and contractor. The skills that are required to develop property are different than those of contracting, as are the risks, but they are closely related and can be developed. Many contractors have become speculative home builders and the larger companies undertake more ambitious schemes such as industrial parks and various types of commercial developments.

7.3 NEW BUILDING PROCUREMENT SYSTEMS AND CONSTRUCTION CONTRACTOR SELLING SYSTEMS

Ball (1989) maintains that the construction industry is currently in a state of structural change, but no single factor can be identified as the cause of change. This is evident in the UK and in South Africa. Several of the aspects of change are described here to introduce the most recent changes in BPS and CCSS.

7.3.1 CATALYSTS OF CHANGE

This is the age of information technology and it has affected everyone, the construction industry is no exception. Information is now freely available and rapidly accessible to anyone with an enquiring mind and a Fax machine. The ability to access and transfer information, together with the ease of transportation and travel, have lead to the so called 'global village', meaning, that the world has become a single market, Levitt (1983). One of the inevitable results of such happenings is an acceleration in the exchange of ideas and methods, leading to the development of improved systems.

The massive oil price increases of 1973/4 imposed impossible loads on the economies of most countries and the result was rampant inflation. Franks (1990), noted that the construction industry's interest in alternative ways of procuring buildings more quickly, was most marked following the oil crisis, as the industry's clients and their advisers realised that for many projects time was now of the essence.

The new found oil wealth created a huge construction market in the Middle East and contractors from all over the world converged on it. Hillebrandt and Cannon (1990) recorded that those companies determined to take the opportunities on offer had to tailor their marketing approach to the scale and glamour of the private sector clients found there. All of the participant in this market had an opportunity to learn from each

other, there were those with marketing skills and others who had no previous experience.

Moore (1984) postulated the opinion that UK contractors had turned to innovative selling methods as a result of the recession, beginning in the early seventies, which had caused a long term decline in demand for buildings. As a result of which contractors were not able to obtain work via their traditional source, the professions.

Other reasons, inherent in the industry, also had an effect. Collier (1987) gave the following reasons:

(i) Increasing incidence of poor management by general contractors.

(ii) Inability of some designers to estimate and control construction costs during the design phase.

(iii) Designers lack of practical construction experience.

(vi) Inflexibility of the traditional lump-sum contract.

(v) The time constraints of the traditional procurement path.

To this could be added the growing restlessness and frustration with the system experienced by the new breed of educated construction managers, see Bowley (1966). In doing so they retarded the exchange of ideas and the intake of educated men into the management of construction and stifled research and development. Until the 1960's managers in construction gained their knowledge and skills from experience. During the sixties, special courses were designed and implemented by the Chartered Institute of Building and several tertiary education establishments. Bowley Chapter XV, described the industry of the sixties as one begging for change.

Pressure from the industry in the form of lobbying produced change, although slowly. Successive committees were commissioned to investigate aspects of construction, most of them concluding as did Banwell, HMSO (1964) in the Banwell report, which was commissioned by the British government. Amongst the recommendations that were made were the following:

* Selected tendering is preferable to open tendering.
* The use of unorthodox methods of appointing a contractor has advantages when used in specific situations.
* Negotiated contracts need not be excluded in the public sector.

This was a stimulus to change that was further encouraged by two other observations of a different nature:

* The industry had failed to satisfy the clients needs, particularly in respect of its management of exceptionally large and complex projects.
* High inflation and borrowing costs were impacting on clients who were looking for shortened project durations.

Thake (1974) linked two of these observations in a paper entitled "Procurement and Productivity - the Scope for Change". He described the Public clients growing professionalism in building procurement and the contractors growing ability to understand these needs and to offer a design and build service to meet this requirement.

A study conducted by the Royal Institution of Chartered Surveyors in 1981, revealed that clients in the private sector were almost universally critical of the industry's performance:

> *The industry - professions and contractors alike - had forgotten who the client was and little or no regard was paid to accommodating thier varied and variable needs. On the contrary the client was expected to fit his requirements into the mould of our standard procedures.* Trickey and Sims (1982).

In South Africa the head of Sanlam properties, Bester (1991), spoke out about the poor poor service that was given to 'professional' clients by quantity surveyors in particular and the industry in general, in doing so he was echoing the the complaints voiced in the UK ten years earlier. (A further indication that the progress made in BPS and CCSS in the UK will soon be found in SA?)

7.3.2 THE RESULTS OF CHANGE

The British and the South African experiences are dealt with separately:

(i) The British Experience

Lansley and Quince (1981) conducted research into the response of contractors to the major recession in the British construction industry, where, demand for construction fell by nearly thirty percent in the mid 1970's. They found that whilst some contracting firms maintained a high workload the majority were forced to choose from three courses of action:

(1) Enter new markets or undertake new types and sizes of project, possibly in new locations.

(2) Increase efficiency in order to exploit existing markets more intensively.

(3) Allow their business to shrink.

Those companies involved in the research that continued to follow traditional doctrines through the 1970's. either went out of business or diminished in size.

They concluded that those companies which had best survived the recession did so because of senior management skill in adapting to the changed circumstances. The

staff of these same companies, when asked to describe the measures that they believed were responsible for survival, listed "meeting customer requirements" and other customer orientated changes as the third most important in a list of 23 objectives.

In a paper entitled "Response to change - the development of non-traditional forms of contracting", Moore (1984) described a significant change that had taken place as a result of the same major recession in Britain, namely, the development and growth of non-traditional forms of contracting. Moore put forward the view that the severe decline in workload and the fact that the traditional source of work via the professions could not be relied upon, caused contractors to get closer to the client themselves. This coincided with the needs of major private sector clients, who were looking for more flexibility and a reduction of rising costs. The outcome was that three major contractual arrangements emerged which appeared to overcome many of the problems associated with the traditional methods, these were:

Project Management.
Design and Build.
Construction Management (Management Contracting)

All three employed the management and co-ordination skills of construction managers at an earlier stage, and the two latter ones include management of design and control of the total financial package.

Moore conducted a survey of medium and large construction companies which showed that:

* Whilst just a few of them had used these new procurement methods before, eighty percent reported offering them after the recession.

* These methods had not been accepted in the public sector.

* Growth of the new methods was still taking place.

Successive reports to the Government, such as:

The Simon report	1944
The Emerson report	1962
The Banwell report	1964

and numerous other less well known reports were published, the nett effect was seen in the way that government construction contracts were let. Closed bidding has displaced open bidding as the most frequently used system and negotiation is now often used.

Two documents which were produced in order to promote the construction industry, certain new PBS's and CCSS. "Faster building for industry" was published by Building EDC (1983) and "Faster building for commerce" by NEDO (1988), one of the main findings of the former was that non traditional design and tendering systems tend to produce quicker project completion times, both tendering on approximate bills of quantities and negotiating to obtain a contractor. The second publication was concerned with much larger projects where professional clients were common and innovative techniques already established, however, two of the main findings are pertinent to this thesis:

* Procedures such as early appointment should be used more often to enable the contractors to advise on buildability.

* The method of selecting the main contractor should fit the circumstances of each individual contract.

In a report entitled 'Building Britain 2001", the Centre for Strategic Studies in Construction at the University of Reading, in reviewing the major forces that were seen to hold influence over the British Building industry of the future, noted the client's demand for change. They stated that the growth of design and build to its present level of 20% of new non-housing building contracts was because of the clients desire for single point responsibility. CSSC (1988).

Hillebrandt and Cannon (1990) noted a move in the British construction industry, towards greater variety in the ways of organising the process of construction. Construction companies became employers of designers, managers of the procurement process, developers and development convenors.

Newcombe, Langford and Fellows (1990)b stated:

> *Traditionally the focus has been upon price competition (as noted in bidding models) but recently emphasis has shifted to include quality and time performance; for some clients the latter criteria dominate price considerations, e.g. developers of city centre commercial properties.*

Measurement of change

Hillebrandt and Cannon (1990) displayed government statistics concerning investment in construction to show the change in spending, from 'Public' to 'Private'. This is reproduced in **Figure 7.2** where it can be seen that the market shrank between 1979 and 88. The public sector lost ground to the private sector which saw growth in the commercial and housing markets. Both of these markets are those where innovative selling methods can have a great effect.

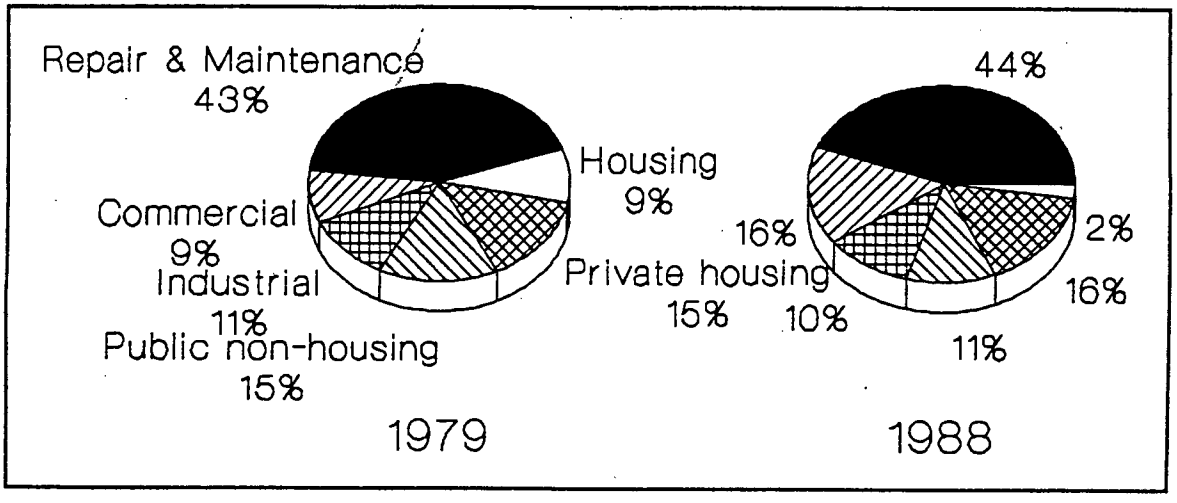


FIGURE 7.2 CONSTRUCTION OUTPUT BY SECTOR IN THE UK 1979 TO 1988. Source Hillebrandt and Cannon (1990)

Franks (1990) used time series data based upon the degree of interest in alternative building procurement systems derived from the number of papers published about each system. This information is presented in **Figure 7.3** and it provides a clear indication of the timing of the various systems and the amount of interest that they generated. Whilst interest began to show in the early 1970's it grew significantly in 1975 when the effects of the oil crisis had caused a deep recession. Note that two of the categories contain more than one building procurement system or selling method:

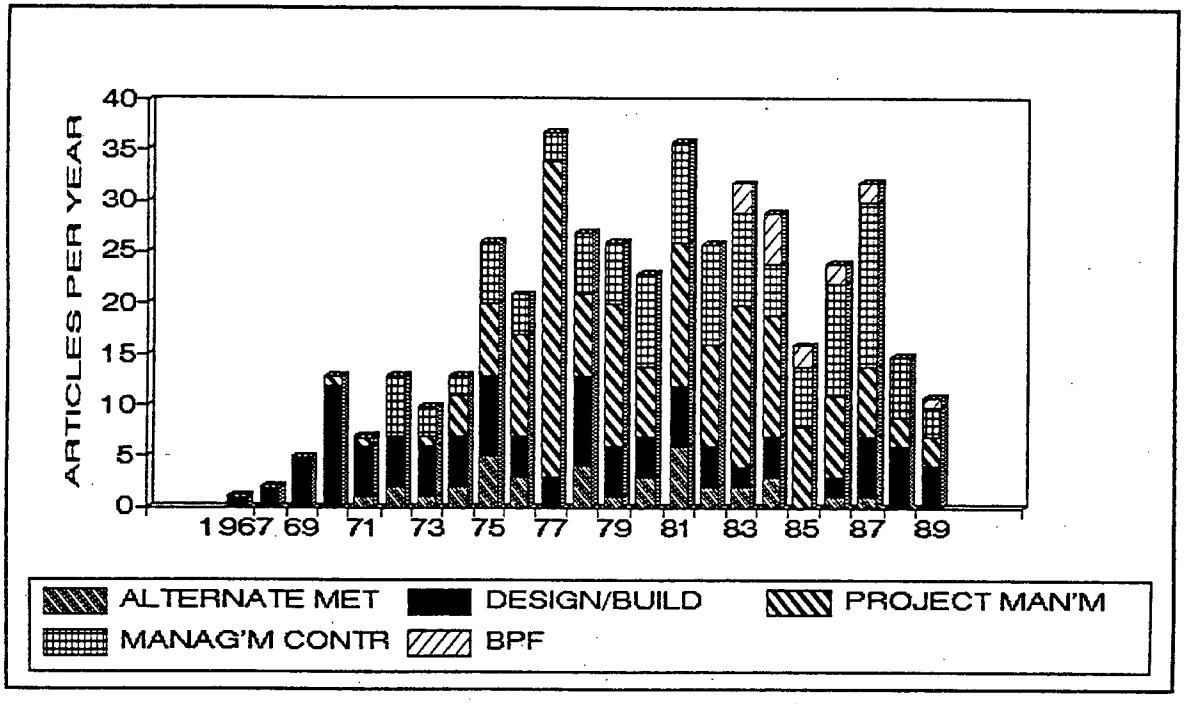


FIGURE 7.3 INDICATION OF INTEREST IN INNOVATIVE SYSTEMS IN THE U.K. Adapted from Franks (1990)

Design and Build- includes - Package Deal and Turnkey

Management Contracting - Construction Management and Fee.

Moore (1984) conducted a survey of general contractors to establish numerous facts relevant to building procurement systems. **Table 7.1** indicates the views of the respondents concerning the future growth or decline of a number of construction sales systems. It indicates that competitive tendering has a bias towards decline whilst Design and Build, Turnkey and Management Contracting show growth. A move towards innovative systems at the expense of the traditional.

Note: Table 7.1 is not an indication of the popularity of one system against the other, merely an indication of the opinion of contractors who are involved in each of the systems, as to its likely growth or decline in the future.

TABLE 7.1 EXPECTED GROWTH OR DECLINE OF CONSTRUCTION SELLING METHODS (strongest response expressed as %age of respondents to each method) Source Moore (1984)

SELLING METHOD	GROWTH	DECLINE
COMPETITIVE BIDDING		3%
MANAGEMENT	21%	
DESIGN AND BUILD	44%	
TURNKEY	50%	

Gray and Flanagan (1989) and Franks (1990) describe the results of surveys conducted by the Junior Organisation, Quantity Surveyors Division of the RICS in 1984, 1985 and 1987. The trends that emerge are: a 7% reduction in 'lump sum' pricing based upon bills of quantities in favour of other innovative systems including Design and Build and shortened systems of lump sum pricing without full bills of quantities.

(ii) The South African experience

South Africa is a developing country and as such it experiences a shorter interval between peaks of the business cycle than Britain. The effects of the global economy are experienced here but have often been softened by factors such as the gold price. In recent years the effects of internal political transition have impacted on the

economy, usually in a negative way, and this has compounded the normal economic cycle to the extent that since 1984 some of the worst economic conditions on record have and are still being experienced. Conditions similar to those experienced in the UK in the mid 1970's have been prevalent since 1985 and the following data would seem to indicate that SA is moving towards more innovative BPS and CCSS as did the UK industry at that time.

Measurement of change

No measure of change in building procurement and contractor selling systems could be found for South Africa in the literature search, though there have been indications (no measurement) such as that provided by Kaminsky and Mace (1989), who commented on the applicability and use of 'Turnkey' and 'Management contracting' in South Africa, stating that "Clients are very willing to look at alternatives". As a result of this the author was required to conduct a survey, in fact three were conducted, see Chapter two for details. The results of the data obtained from four sources are shown here:

- Information obtained from the Department of Statistical Services
- Information obtained from a survey of contractors in the Western Cape
- Information from a survey of architects and quantity surveyors throughout the whole of South Africa
- Data extracted from the records of the BER from quantity surveyor quarterly surveys, over a period of seven years.

(a) Department of Statistics Services Pretoria

In South Africa, as in the UK, the growth of the institutional clients, who can be described as professional clients because they are repeat buyers, and the decline of the public sector client has been a factor that has influenced change. See Figure 7.4 which

indicates that a similar situation as that observed by Hillebrandt and Cannon in the UK has occurred in SA, that is, the growth of the private sector and a reduction in total investment in construction.

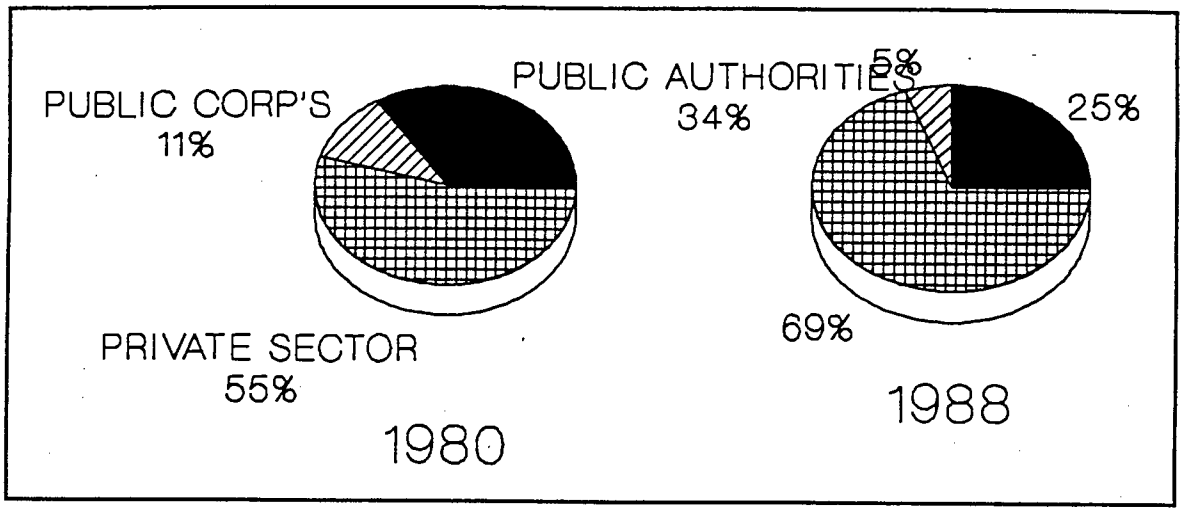


FIGURE 7.4 CONSTRUCTION OUTPUT 1979 AND 1988 IN SA PUBLIC AND PRIVATE SECTORS
Data source: Department of statistical Services

This would seem to offer conditions which are conducive to innovative CCSS, since, the private sector is more responsive to them than the public sector for reasons previously stated.

(b) The Western Cape survey

One of the findings of this survey is demonstrated in **Figure 7.5** where it can be seen that construction companies who were based in the Western Cape region during the recession of 1984-86, changed from the open bid method of making a sale to other methods, including property development. Further, it indicates that the contractors themselves, moved by choice, away from the competitive bidding method, since, only their own effort could get them into the development market. It should be noted that the house building sector recovered from the recession before other sectors, thus offering an ideal, low technology, opportunity.

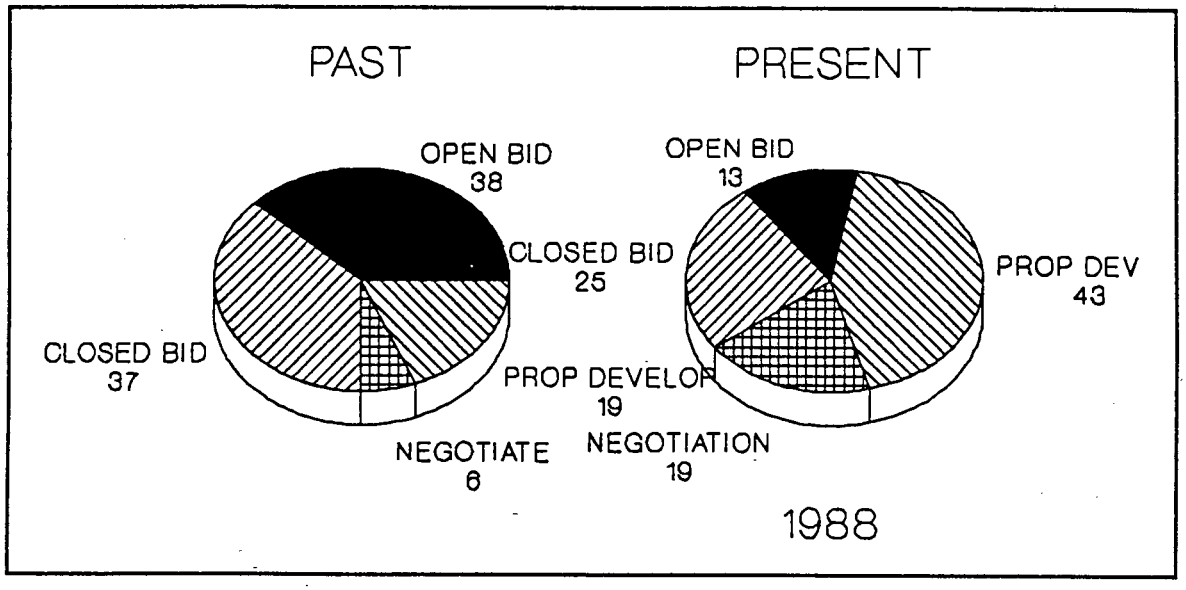


FIGURE 7.5 SALES METHODS USED BY CONTRACTORS BEFORE AND AFTER 1988.
Data source: Western Cape Survey

Newcombe, Langford and Fellows (1990)b, noted that many contractors, even during periods of quite depressed workloads, consider project opportunities via open tendering to be insufficiently attractive to warrant action. That is to say, no tendering action is taken, particularly due to the likely number of bidders and the resultant low profitability.

(c) National survey of architects and quantity surveyors

The findings of this survey are displayed in **Figure 7.6a and 7.6b.** The respondents were asked to indicate the building procurement systems that they had used over the past twelve months, (June 90 to July 91) and to indicate which methods they expected to be used more in the future. The response indicates a clear shift from open bidding. Architects believe that in the majority of cases, contractors will be selected by negotiation, followed by closed bidding. Quantity surveyors are not as confident about negotiation but they are in agreement about open bidding and other (more innovative) methods, 14% and 3% respectively.

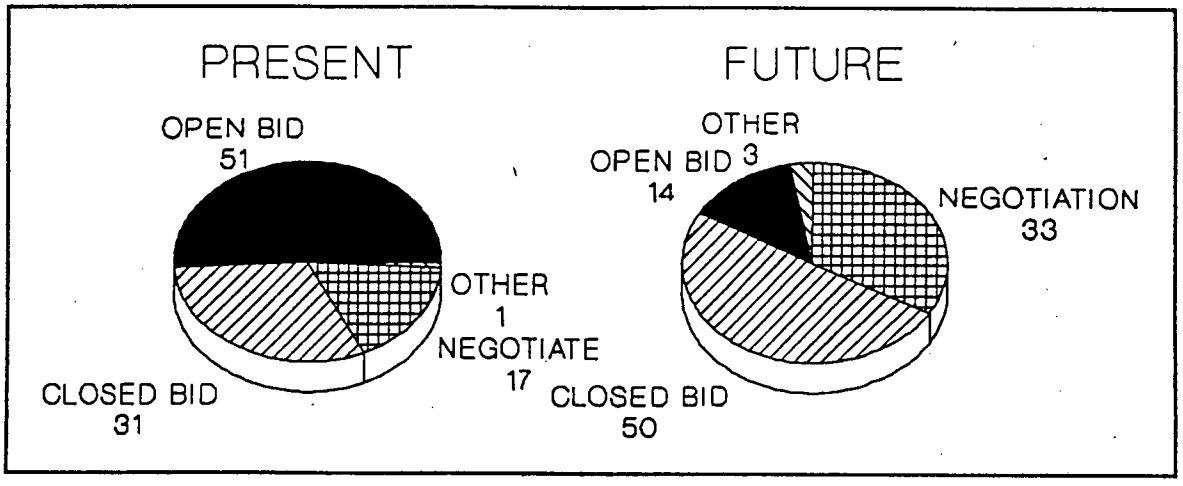


FIGURE 7.6a CONTRACTOR SELECTION TECHNIQUES PRESENT AND FUTURE - QUANTITY SURVEYORS RESPONSE.
Source of data: National Survey

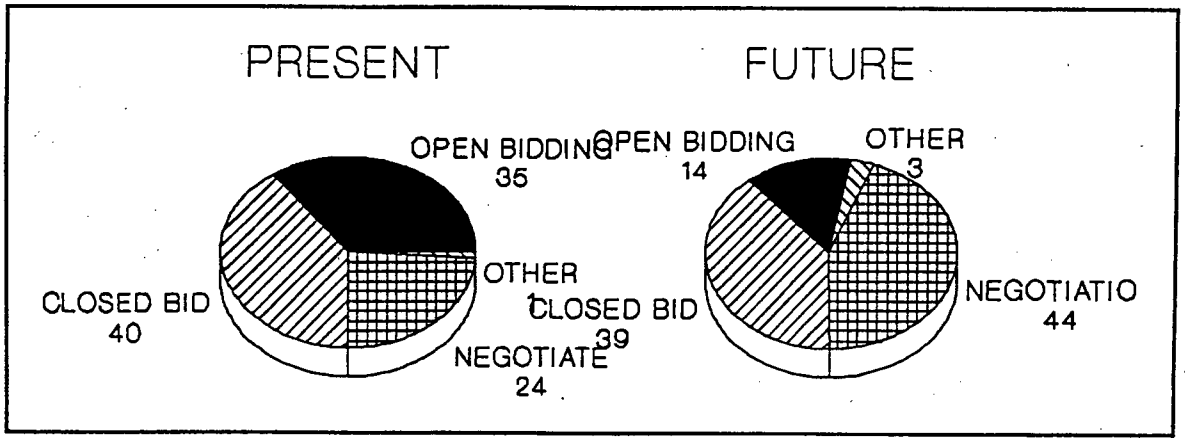


FIGURE 7.6b CONTRACTOR SELECTION TECHNIQUE PRESENT AND FUTURE - ARCHITECTS RESPONSE.
Data source: National Survey

(d) BER survey data

The BER kindly allowed the writer to extract data from their Building Cost Index database, that has not been used in this format before. The data has been submitted by quantity surveying practices from all parts of South Africa, on a quarterly basis and

whilst it is not a comprehensive list of all of the contracts let nationwide, it is a representative sample. **Figure 7.7** indicates the Contractor Selection Systems in use between 1983 and 1990. The three systems, Open bidding, Closed bidding and Negotiating, have been plotted against the total of all. It clearly indicates:

1) Open bidding is the most popular system in use
2) Open bidding is declining in use
3) Closed bidding and negotiated methods are increasing
4) Closed bidding is growing faster than negotiated
5) Relative market share was constant until 1987

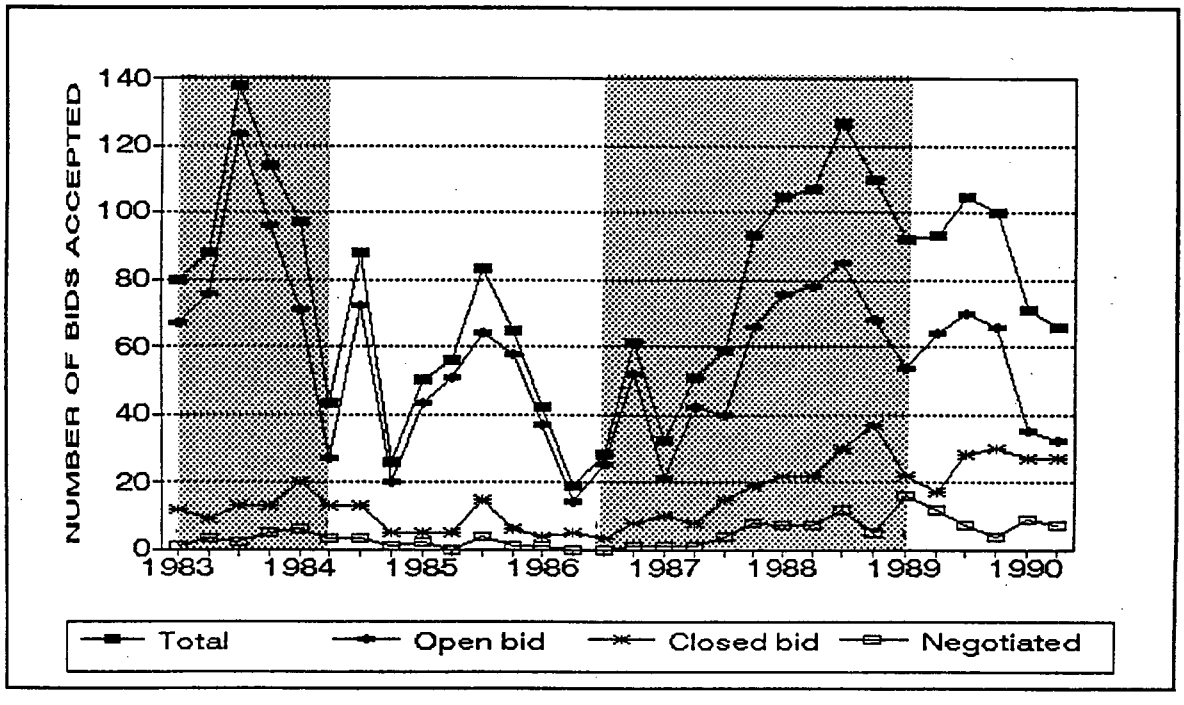


FIGURE 7.7 CONTRACTOR SELECTION SYSTEMS IN USE 1983 TO 1990
Data source: BER BCI survey

It should be understood that negotiated contracts may enjoy greater usage, if one considers that quantity surveyors are often not involved in negotiations, whilst they are likely to be involved in the other two methods. This argument is supported by the data presented in **Figure 7.6**, where the architects have reported a higher incidence of negotiation in use than have the quantity surveyors

7.3.3 NEW CONTRACTOR SELECTION SYSTEMS

The research findings have not revealed evidence of any new contractor selection systems in use in SA at this time. Those new PBS's which are in use in the UK and are likely to be seen in SA in the near future (the evidence suggests that we are following the lead of the UK in other procurement trends) may have peculiar requirements and they are described here:

* The British Property Federation system (BPF) stipulates that the closed tendering system should be used.

* Project management has the flexibility to chose any of the traditional methods, but it may entail the letting of contracts to specialist contractors rather than a general contractor. This is also the case with Management Contracting and Contract Management.

* Design and Build, Turnkey and Package deals may be used with the traditional contractor selection systems when promoted by clients consultants, but they have evolved as systems which are contractor driven. That is to say that, contractors have changed from the passive role by becoming proactive and offering clients a 'one stop service' whilst employing and controlling many of the other consultants in the traditional building procurement system.

7.3.4 NEW CONSTRUCTION COMPANY SELLING SYSTEMS

(i) Pro-active contracting

Design and Build, Turnkey and Package deals can be contractor driven in much the same way as was described for pro-active negotiation, the contactor must identify the prospective clients need before the client is aware of it or, at least, before designers have been engaged. The contractor offers a total service by accepting the design risks and often such items as finding a site, negotiating finance and leasing the building. Entrepreneurial skills are required and those of strategic management and leadership commensurate with the additional risk that must inevitably ensue from this selling method.

(ii) Consulting

By moving into the realms of Management Contracting, Project Management and to the position of BPF clients representative, contractors have an opportunity to change their role to one of consulting for a fee. Contractors that have done this have usually set-up a separate division within their company because of the great difference etween consulting and traditional contracting.

(iii) Selling the product

Another change that has occurred, which is not well documented, is one which has evolved as a result of the experience gained by contractors, who have discovered that property developments are cash hungry and that the risks are more than they are able or willing to undertake on their own. The method that has evolved is one which

requires the contractor to become a convenor. One who recognises development potential and to effectively sell this potential to developers and finance companies in exchange for the sole rights to build the project. In short they have become property developers and development convenors, who, by doing so have moved to a situation where they are the client. (Collier 1987, p. 204)

7.4 SUMMARY AND CONCLUSIONS

7.4.1 SUMMARY

A very significant change in the process of construction has occurred which is continuing to develop. It is particularly apparent in the building procurement path where construction companies and managers of construction projects, have become active in the areas that were the traditional reserve of the architect.

It would seem to be a time of change precipitated by a major recession, which had the effect of a catalyst in an industry that had become steeped in tradition, was seen to be backward and as a result had accummulated quantities of internal stress and external resistance which had made it a volatile area, ready for change.

Amongst the most significant of those factors which lead to internal stress were several latent areas of accummulated knowledge and emotion, including:

* The advent of management education for construction personnel such as university degrees and the entrance requirements of the Chartered Institute of Building, produced a new breed of managers with a broad perspective.

* The construction industry had become disenchanted with the performance of the designer in the role of clients advisor and intermediary and with the systems used for 'selecting' contractors, which had the effect of keeping them out of the design process. They had been lobbying the government to achieve change in the conditions and methods of contractor selection for some time.

* The client body which supported the old order began to lose its powerful hold as its percentage share of the market gave way to private sector clients who were more receptive to change.

* Private sector 'professional' clients were dissatisfied with the ponderous building procurement systems, lack of financial control and contract overruns. They demanded that emphasis be placed, not only on price but on time, quality and cost.

All of the above factors caused contractors to re-evaluate their role. They have realised that they have two things that they can sell, a service or a product. Traditionally they had offered only a service, just one kind of service, that of management of the building assembly process, in the role of general contractor.

Contractors are said to be passive when they are dedicated to the traditional building procurement system and therefore, the traditional contractor selection systems, they can also be termed reactive in that they await the announcements of their customers or their agents to join in the competition for a sale, based upon price, with their competitors

It has been shown that contractors need not be restricted to one method of selling their services, indeed, they can even sell their products. They are able to offer:

(i) Management and control of the construction process be it as:
- General contractor
- Specialist contractor

(ii) Consulting services as:
- Management consultant
- Project manager

(iii) Buildings for sale in the form of:
- Houses and apartments
- Factories
- Offices and shops

Further, the methods which they use to sell their service, even via the traditional building procurement system, are varied and are changing from a situation where open tenders were the norm to closed bidding being the norm, with growth of the negotiated method.

7.4.2 CONCLUSIONS

The trend indicated in Figures 7.5 and 7.7 provides proof that the needs of the client and desire of the contractors is being met. Three things have been achieved:

1) A move away from open competition.
2) Involvement of the contractor at an earlier stage in the building procurement system.
3) Contractor selection based upon time and quality in addition to price.

Hillebrandt and Cannon (1990) noted:

> *One of the consequences of many of these changes is that the contractor is moving closer to the client who is himself becoming more sophisticated and is often now the driving force for improvements in the construction process.*

The real change that has occurred as a result of these innovative procurement systems is that the contractor has challenged the traditional role of the designer by incorporating design into his service or, at least, managing the design process.

Therefore, if construction company managers are aware of and study the specific requirements of the selling systems described within this dissertation and they develop the necessary marketing and technical skills, they will be able to choose the selling system or systems that they prefer.

THE THIRD SUB HYPOTHESIS

The third Hypothesis was stated thus:

It has been the tradition for construction companies to use the 'competitive tendering system' as the principal method of selling their services, but the current trend is towards other methods.

The data presented in this Chapter provides conclusive proof of the accuracy of this Hypothesis.

CHAPTER 8

CHANGES IN DEMAND FOR BUILDINGS AND THE PERFORMANCE OF SALES SYSTEMS FOR CONSTRUCTION COMPANIES

It may be untrue to say that demand can be created, but potential demand can certainly be converted to real demand by effort. Jepson and Nicholson (1972) p.13

8.1 INTRODUCTION

In this chapter sub-problem No 4 will be dealt with:
Are certain methods of selling construction company services more suitable than others for coping with demand fluctuations ?

The findings of Chapters four, five and seven will be analysed here.

8.2 REVIEW - EFFECTS OF DEMAND FLUCTUATION ON SALES

Tables 5.4 and 5.5 summarised the effects of the business cycle on the construction industry.

The primary effects were:

(i) The level of demand for buildings
(ii) The degree of competition for customers
(iii) The degree of demand for resources

Since this dissertation is concerned with sales, only the first two of these primary effects are considered in this Chapter. Similarly, Table 5.2 was used to demonstrate that the high risk with respect to sales exists in the recession and trough phases of the cycle only and for this reason this chapter will mainly be concerned with these phases.

8.3 ANALYSIS OF SELLING METHODS FOR CONSTRUCTION COMPANIES

In chapter seven the various construction company selling systems were reviewed, here, we will analyze them in order to discover their ability produce the required level of profitability in the recession and trough phases.

8.3.1 CONTRACTOR SELECTION SYSTEMS

These systems may be used by project managers or principal agents involved in any of the building procurement systems.

(i) Open competitive bidding (open/public tender)

This selection system allows access to any person or group who choose to call themselves contractors to submit a bid in competition with others. It has many disadvantages that are well documented, including, Simon report (1944), Banwell

(1964), Chapman & Webb (1983), not least amongst these disadvantages, from the contractors point of view, are:

* Allows access to unskilled people, often ignorant of the true costs and risks of construction who, as a consequence, are able to win in competitive bid situations.

* Allows that bidder who has made the largest error in his calculations to win the bid.

* Usually means that price will bring minimal return unless contractual opportunities are exploited - leads to battle-field conditions and high stress.

* Technical in nature, well understood and impersonal, needs no human relations skill - easy.

* Limits risk by virtue of the degree of documentation and is a well practised procedures - comfortable.

(ii) Closed competitive bidding (selected/invited tender)

A system which eliminates many of the disadvantages of the open bid system by allowing entry only to those who are able to meet certain selection criteria. It's advantages and disadvantages, from the contractors point of view, are:

* competition not only based upon price but other criterion such as, previous experience and results, strength of intended construction team, suitability of proposed plant and equipment and financial standing.

* Are usually assured of being able to compete against those who are competent.

* Are usually assured of being able to compete against a small number of bidders. (ease of analysis of competitors)

* Limits risk by virtue of the degree of documentation and is a well practised procedures - comfortable.

(iii) Negotiation

This system may be used in two ways, 'Traditional' and 'Innovative"

The traditional negotiation role

Can be utilised as the second stage of a two stage selection process, the first stage being a form of competitive bidding. The latter generally termed 'Two Stage tendering'. However, it is quite common in South Africa for one contractor to be invited to negotiate, for reasons that include:

(i) Contractor has a reputation that suits the clients needs, such as good quality of workmanship or completion on time, etc.

(ii) Client has worked with the contractor on previous occasions.

(iii) Contractor and customers have common shareholders. Such as: Sanlam (a major private sector customer) who are the ultimate controlling shareholder of Murray and Roberts and Anglo American who control LTA. McGregor (1991).

This system has a number of advantages and disadvantages which, from the contractors point of view, are:

* No standard procedures as for competitive bidding.

* Demands that contractor be marketing orientated.

* Much more effort required.

* Requires specialist skills - technical and human relations.

* Brings a personal element into the contract. Many feel more comfortable when they know the calibre of the people with whom they are dealing and prefer to trust in a persons word rather than an impersonal contract.

* Reduces competition and offers opportunity to agree a fair price. Hillebrandt & Cannon (1990),p.77.

* Offers the opportunity to reach an agreement based upon factors other than price:

  Time / Quality / Systems / Procedures

* Offers the opportunity, by joining earlier, to influence design and buildability.

* Brings a degree of trust and 'give and take' and reduces the stress that opportunistic or 'claims contracting' bring.

* Risk greater than for competitive bidding.

Innovative negotiation role

Advantages to the contractor are:

* No competition.

* Opportunity to curry favour and improve working relationships with designers and quantity surveyors.

* Opportunity to influence selection of most effective design team and to design for economy and speed.

8.3.2 SELLING A ONE STOP SERVICE

Design and Build, Package Deals and Turnkey Projects are often referred to as 'one stop packages' meaning that the client need appoint and deal with one organisation for all of the activities in the building procurement process.
Advantages to the contractor are:

* Reduced competition by virtue of the small number of companies able to offer this service.

* Opportunity to curry favour and improve working relationship with designers if not directly employed.

* Seen to be competing with designers and quantity surveyors who may deny your access to other selling systems in retaliation.

* Lack of awareness or acceptability of this method of contracting amongst customers and consultants.

8.3.3 SELLING A CONSULTING SERVICE

The types of consulting service that are referred to here could be wide in scope but

those which have been addressed specifically in this dissertation are:

Management Contracting/Construction management

Project Management

Whilst the skills required for this type of work are found in large construction companies, they will need to adjust their style and method of operation in order to be effective. There are advantages and disadvantages to both parties, from the contractors point of view, these are:

* Risk are reduced for consulting work but may be increased for project management, depending on the responsibility which may vary from client to client, see Hayes (1986).

* Is an area where few are able to offer the service, a market niche. - little competition.

* Difficulties of learning the required skills and customers who understand the process.

* Puts contractor in competition with designers and quantity surveyors.

* Will require the formation of a separate division or company.

8.3.4 SELLING PRODUCTS

Two methods of utilising the 'developer' system are analysed, 'Traditional' and 'Innovative':

Traditional developer role

Amongst the advantages and disadvantages to the contractor are the following:

* No competitors for the construction sale.

* Cash tied-up for long periods of time may limit growth in construction.

* Very high risk - change in type of risk.

* Provides an opportunity to find a market niche. - little competition.

* Difficulties of learning the required skills.

* Puts contractor in competition with designers quantity surveyors and property developers.

* Will require the formation of a separate division or company.

Innovative developer role

This method has certain benefits that are more advantageous, than the 'traditional' one, such as:

* Reduction of risk.

* Reduced level of funding by contractor.

A second innovative method of selling a product is that of selling prefabricated structures or components but this has been excluded from the final summary below because it goes beyond the scope of this dissertation.

8.4 THE PERFORMANCE OF SALES METHODS AGAINST DEMAND FLUCTUATION

As a result of the analysis given in section 8.3 it is possible to rate the performance of the various methods of achieving a sale. This is set out in **Table 8.1** which provides an indication of the degree of risk and competition to be found at any time or stage of the business cycle. (see Figure 6.1 for a measure of risk) However, the hypothesis is concerned with the degree of competition at various phases of the business cycle, and in order to quantify this, consideration of other factors is required.

Because of a lack of specific data, it has been assumed, that demand fluctuations will affect each of the selling systems equally. However, those systems that have no competition will maintain this status regardless of the cycle, even though it can be anticipated that there will be fewer customers or opportunities.

TABLE 8.1 CONSTRUCTION COMPANY SELLING SYSTEMS: DEGREE OF EXPOSURE TO COMPETITION AND RISK

SELLING METHOD	COMPETITION LEVEL						RISK
	1	2	3	4	5	6	RATING
OPEN BIDDING						*	8
CLOSED BIDDING				*			7
NEGOTIATED TRADITIONAL			*				8
NEGOTIATION INITIATED		*					7
PROP/DEVELOP TRADITIONAL	*						8
PROP/DEVELOP CONVENOR	*						5
DESIGN AND BUILD		*					10
CONSULTING			*				1

The open bidding system is the one that will be affected most in a recession, since, there is no restriction on the number of bidders per project. (The data used to compile Figure 5.2 indicates that the number of bids per project over the ten year period of ranged from one occasion when only one bid was received and several occasions where more than twenty were received, and a month when the average was twenty seven) A second factor which was found in Chapter five is that of the ease with which companies which normally are dedicated to other sectors, such as civil engineering and housing, move into the general contracting open bidding market. This type of flexibility is not applicable to most of the other selling methods because of the various barriers to entry. Those barriers are:

Closed bidding and Negotiating:

A limit on the number of bidders.

A track record for type, size and quality.

Property Development, Package Deals and Consulting:

Experience

A track record

Size of company and availability of finance

Availability of sites

However, construction companies in the Western Cape which responded to a survey conducted by the author, relating to the effect of change resulting from the 1984-86 recession, revealed that a number of contractors were able to overcome the barriers of entry into the property development market reasonably quickly, perhaps this was because it was the low technology housing market. **Figure 8.1** also demonstrates this, together with the most significant finding. Thirty percent of the respondents attributed their survival of the recession to the fact that they had moved away from 'open bidding' to other selling methods and half of these, by moving to property development.

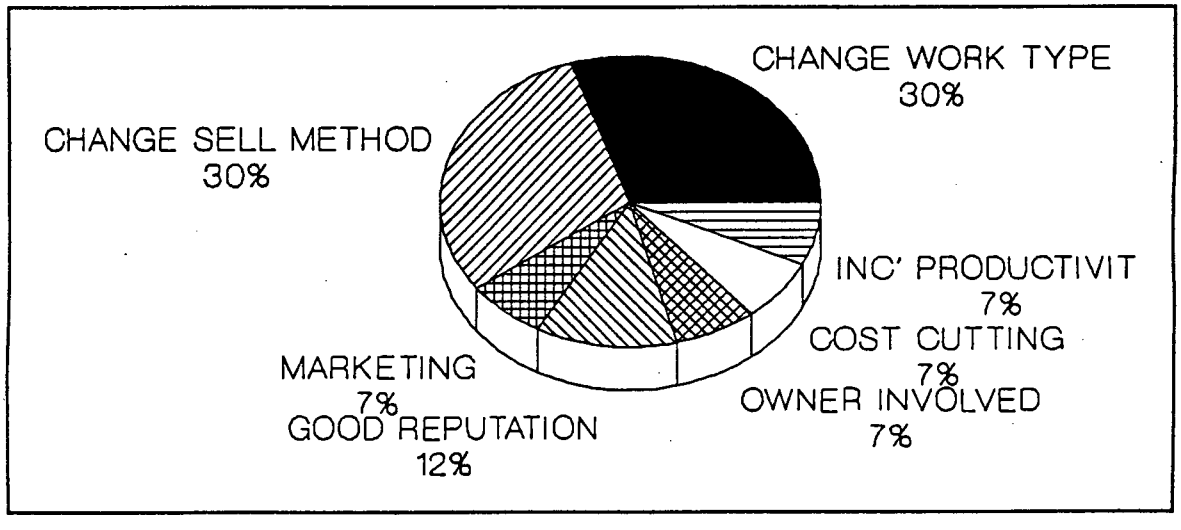


FIGURE 8.1 METHODS USED BY CONTRACTORS IN THE WESTERN CAPE TO SURVIVE THE 1984/1986 RECESSION.
Source of data: Western Cape Survey

8.5 SUMMARY AND CONCLUSIONS

8.5.1 SUMMARY

In this chapter, eight selling systems have been identified. Four which apply to the traditional general contracting company, without any change, and three which will entail some modification to the structure of the company. For example, 'consulting' will not involve the production part of the business, whilst 'property development' and 'design and build' will because additional skills and personnel will be required. For this reason it could be argued that consulting should not be included here or that diversification into the production and sale of building materials should.

In section one, it was shown that the level of turnover and profitability of construction companies is directly influenced by the degree of competition for customers. When competition is light, profitability levels can be described as reasonable or good. When it is severe, profitability is low or non-existent. Therefore, it is reasonable to conclude that the measurement of risk, indicated in Table 8.1, is also a measure of the potential for the expectation of a reasonable level of profitability at the time that the sales transaction is concluded. (final project profitability is influenced by many other factors which are not considered here) One further consideration that must be noted is the fact that the expected return on investment for the different types of service will not be equal because the risks involved differ, and it can be said that the greater the risk the greater is the expected return on investment, Kantor (1991), CSSC (1988) p.18 and Flanagan and Norman (1989).

It could be argued that each type of service will produce a reasonable return on investment during periods of low competition but that the effect of the recession phase will increase the competition, probably to all sectors. It has been shown that barriers to entry will prevent the rapid migration of competitors into those areas of limited

competition but that open bidding will be affected more than the other systems during a recession phase. Further evidence of this is provided in **Table 8.1** which contains the answer to the question, "To what do you attribute your survival of the recession ?" which was posed in the Western Cape survey. (Appendix A)

8.5.2 CONCLUSIONS

It is reasonable to conclude that the degree of competition will increase during a recession phase in direct relation to the amount of exposure to competition that each system attracts.

Those CCSS and BPS which reduce the amount of competition will be more suitable for the maintenance of profitability when faced with low demand for construction.

THE FOURTH SUB HYPOTHESIS

The fourth Hypothesis was stated thus:

Sales methods that reduce the degree of competition between contractors will help them to ensure the maintenance of turnover and profitability through the recession phase of the business cycle.

The data presented in this Chapter provides conclusive proof of the accuracy of this Hypothesis.

CHAPTER 9

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

9.1 SUMMARY

The two parts of this dissertation were considered separately and brought together in chapter eight. In this Chapter the findings of each chapter will be summarised in order to test the primary Hypothesis.

Part one was concerned with the business cycle and its effect on building construction companies and the key findings were:

* The business cycle and the demand for new buildings behave in sympathy with each other and as a result of this, the short term building cycle is seen to behave in sympathy with the business cycle.

* An understanding and ability to forecast the demand for construction would be more useful and important to the industry than knowledge of the construction cycle.

* The BER time series 'building tenders accepted' is a quantitative source of data not previously used, that can provide valuable information about sub-sector demand and activity cycles.

* That the movements of the business cycle can be forecast with a reasonable degree of accuracy and whilst its exact relationship with each of the sectors of the industry are not fully understood, a reasonable estimate of their behaviour can be established by drawing comparisons with the phase of the business cycle.

* That these changes in demand have a great effect on the construction industry. These effects can be described as 'Primary', those which have a major impact, and 'Secondary', those which are caused as a result of the 'primary effects'. The primary effects being:

    1) Fluctuations in the demand for construction that will occur in sympathy with the business cycle.

    2) A corresponding fluctuation in the level of competition for customers and inverse fluctuations in the demand for resources.

* It was also found that the secondary effects could be avoided if the primary effects were managed. The type of management needed being proactive at least and strategic market orientated, at best.

* Because the business cycle is constantly changing and each change has an effect on the demand for construction it can be said that construction management entails the management of change.

Part two was concerned with the methods that construction companies use to find customers and achieve sales.

* It was found that the open competitive bidding method of contractor selection has been the primary means of achieving a sale but that many other methods do exist (at least seven) and that the use of these alternative methods is increasing.

* Contractors need not wait for customers to find them. By selecting appropriate Construction Contracting Selling Systems and employing the appropriate techniques, they can find a market niche that will be less competitive than the traditional competitive bidding system.

* Those selling systems which reduce the amount of competition that a contractors may be exposed too, will improve their chances of achieving sales with a reasonable level of mark-up.

* Contractors should develop expertise with a range of selling systems that can be used for the appropriate phases of the business cycle.

* It will take time and effort to overcome the barriers to entry that may be found and to implement a specific selling system for a particular client or market sector.

9.2 CONCLUSIONS

Within these pages it has been shown that construction company managers can obtain forecasts that will enable them to determine the stage of the business cycle and its likely turning point. They will also be able to read of the effects of that particular stage of the cycle, on the environment (market place), on the industry and on individual companies. This will allow them to shape a strategy to suit the future, far more effectively, and given that the market in which they trade has customers for all of the possible selling systems described here, they will be able to direct their marketing and training towards implementation of selling methods that will better suit the recession phase and trough of the business cycle.

The list of selling methods that is described here is not complete, it does not include patented systems and prefabricated buildings or diversification, but the same logic can be applied to these methods.

It is not suggested that only one method of selling the product or service be used for a particular stage of the cycle, indeed it would be wise to have as many options available as possible, since, other factors may play a role in the success of a particular method for a specific client at a certain time. For example, fashion or popularity of the method and the clients exposure to a particular method.

THE PRIMARY HYPOTHESIS

The primary Hypothesis was stated thus:

Contractors can maintain reasonably consistent turnover levels, and profitability, if they understand the effects of the business cycle, are able to predict the turning points, and are able to use specific methods for marketing and selling their products and services that are compatible with each phase of the cycle.

The contents of this dissertation have shown that the various components of this Hypothesis are true, therefor the primary Hypothesis is conclusively proved.

9.3 RECOMMENDATIONS

Recommendations are to be made which apply to the two parts of this dissertation:

9.3.1 BUSINESS AND CONSTRUCTION CYCLES

It is clear that a great number of research opportunities exist in this field but the main challenge will be that of finding new and reliable sources of time series data, improving that which presently exists or finding a suitable composite indicator.

The pursuit of demand data relative to the individual sectors of the construction market is likely to produce more accurate and useful data than the aggregate of all construction or building.

The regional effect on business cycles and construction demand should be investigated in order that regional adjustments to forecasts can be made to make them more effective. Factors such as the effect of the drought cycle in areas where agriculture is a key factor of the economy.

Perhaps a great deal could be gained if all of the building economists in SA were to participate in joint research, or at least, a seminar designed to find common ground and to reach agreement upon a common set of values and to formulate a plan to improve the reliability and accuracy of forecasting. In this way they could increase the potential number of clients and improve the performance of the construction industry as a whole. by virtue of the small number of clients whom they all wish to serve, is perhaps preventing a more rapid development of their forecasting abilities. They could become more effective

9.3.2 BUILDING PROCUREMENT AND CONSTRUCTION CONTRACTING SELLING SYSTEMS

The confusion is evident in the terminology relating to the methods and procedures which are undertaken in order to produce and deliver a building, referred to herein as 'building procurement systems', should be addressed. At which time all of the related

terminology, such as that suggested herein could be reviewed and proposals developed towards standardisation.

The need for informative and procedural literature has been identified with respect to 'negotiations' and the building procurement systems that are new to South Africa. Individual construction companies will not be able to afford the necessary promotion costs but employer organisations and professional institutes could, perhaps they should attempt the type of exercise that was undertaken by NEDO which resulted in the informative publications entitled "Faster Building for Industry" and "Faster Building for Commerce"

Four topics that offer potential for further research are listed below:

It would seem that there is a link between severe economic recessions, innovation and change within the industry. If this is so then why dose it require major upheaval before change can take place and to what extent is the growth of innovative systems held back by the fact that it is viewed by designers and quantity surveyors to be a threat.

Does demand fluctuation affect each of the contractor selection systems equally.

What are the barriers to entry for each of the selling systems.

There would seem to be a relationship between the time of getting into the building procurement system and the degree of competition that is found.

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APPENDIX A

WESTERN CAPE CONSTRUCTION CONTRACTOR SURVEY

QUESTIONNAIRE

DATE COMPLETED :-

The purpose of this questionnaire is :-

1) Categorise contractors by size, work type and length of time in business.

2) To identify any changes in the type of project undertaken and the methods by which the projects were secured.

3) To identify trends or similarities relative to 1 & 2 above.

1) COMPANY CLASSIFICATION/PROFILE (Mark appropriate box for each question)

WHEN WAS YOUR COMPANY FIRST ESTABLISHED ?

HOW LONG HAVE YOU BEEN CONTRACTING IN THE WESTERN CAPE ?

ARE YOU PART OF A LARGE GROUP WITH OTHER REGIONAL OFFICES ?

ANNUAL TURNOVER (value of work completed in a twelve month period)	LAST YEAR 88/89	2 YEARS AGO 86/87	6 YEARS AGO 82/83
R1M TO R5M			
R5M+ TO R10M			
R10M+ TO R15M			
R15M+ TO R25M			
R25M+ TO R30M			
R30M+ AND OVER			

TYPES OF WORK UNDERTAKEN	(RANK 1st 2nd etc in order of importance for each period) AT PRESENT	5 YEARS AGO	10 YEARS AGO
HOUSING i) PRIVATE			
ii) PUBLIC			
NEW BUILDINGS i) PRIVATE INDUSTRIAL			
ii) PRIVATE COMMERCIAL			
iii) PUBLIC - SCHOOLS			
iv) PUBLIC - OTHER			
RENOVATION & REFUBISHING i) MAJOR (+R1M)			
i) MINOR			
CIVIL i) PRIVATE			
ii) PUBLIC			
OTHER (SPECIFY)			

AREAS WHERE WORK UNDERTAKEN	(RANK 1st 2nd etc in order of importance for each period)		
	AT PRESENT	6 YEARS AGO	10 YEARS AGO
(see attached map for explination of areas)			
PENINSULA			
CITY			
CAPE FLATS			
ATLANTIS			
BOLAND			
OTHER (more than one hour drive)			

2) METHODS OF OBTAINING WORK (Mark appropriate box for each question)

METHOD OF OBTAINING	(list number of projects each year for each type)						
	88	87	86	85	84	83	10 YRS AGO
OPEN TENDER							
INVITED TENDER							
NEGOTIATED							
-CLIENT INVITATION							
-YOUR INSTIGATION							
OWN DEVELOPMENT							
-BUILD YOURSELF							
-BUILD BY OTHERS							
OTHER (please state)							

DIVERSIFICATION / CONSOLIDATION	RETREATED FROM	YEAR	DIVERSIFIED INTO	YEAR
HAVE YOU DIVERSIFIED INTO OR CONSOLIDATED BY RELENQUISHING OTHER TYPES OF BUSINESS EG, MANUFACTURING, PROJECT MANAGEMENT SUB-CONTRACTING, PLANT HIRE, ETC				

RECESSION (84 TO 87) "SURVIVAL"

TO WHAT DO YOU ATTRIBUTE YOUR SURVIVAL OF THE RECESSION ?
IE, WAS IT :-
AN ASPECT OF YOUR MARKETING ?
A CHANGE IN TYPE OF WORK ?
A CHANGE IN METHODS OF WINNING WORK ?
PLEASE USE OTHER SIDE OF PAPER IF REQUIRED :-

MARK THE SPACE PROVIDED IF YOU WOULD LIKE A SUMMARY OF THE COMBINED RESPONSE TO THIS QUESTIONNAIRE [ ]

APPENDIX B

NATIONAL SURVEY OF QUANTITY SURVEYORS AND ARCHITECTS

QUANTITY SURVEYORS

SECTION ONE : DEMOGRAPHIC DATA

Unless otherwise requested, please place an " X " in the appropriate space provided.

QUESTION 1.1 PLEASE INDICATE THE CURRENT FULL-TIME STAFF LEVELS IN YOUR OFFICE (LOCAL BRANCH).

	less than 3	between 3 and 5	between 5 and 10	between 10 and 20	more than 20
Partners					
Associates					
Quantity Surveyors					
Technicians					
Students					
Other (please specify)					

QUESTION 1.2 PLEASE INDICATE TO WHICH QUANTITY SURVEYING CHAPTER YOUR OFFICE BELONGS.

Western Cape	
Eastern Cape & Border	
Southern Transvaal	
Northern Transvaal	
Natal	
O.F.S & Northern Cape	

QUESTION 1.3 PLEASE INDICATE YOUR CURRENT WORK-MIX AS A PERCENTAGE OF YOUR TOTAL WORK-LOAD (TOTAL EQUALS 100%).

	public sector	private sector
Housing		
Industrial		
Commercial		
Engineering		
Renovations & Maintenance		
Other (please specify)		

QUESTION 1.4 PLEASE INDICATE THE FIRM'S AVERAGE GROSS ANNUAL TURNOVER, IN RESPECT OF BUILDING VALUE, OVER THE LAST 3 YEARS.

Average gross annual turnover in respect of building value over the last three years	R ----------

QUESTION 1.5 PLEASE INDICATE WHICH CONTRACT PROCUREMENT METHODS YOU HAVE BEEN INVOLVED IN OVER THE PAST TWELVE MONTHS.

	percentage of total	indicate the trend by marking the method which is increasing in use
Open tender		
Selected tender		
Negotiated contract		
Other (please specify)		

QUESTION 1.6 WHAT TYPE OF DOCUMENTATION HAVE YOU USED IN THE CONTRACT PROCUREMENT PROCESS OVER THE PAST TWELVE MONTHS ?

	percentage of total	indicate the trend by marking the method which is increasing in use
Bills of quantities		
Provisional bills		
Schedules of rates		
Other (please specify)		

ARCHITECTS

SECTION ONE : DEMOGRAPHIC DATA

Unless otherwise required, please place an " X " in the appropriate space provided.

QUESTION 1.1 PLEASE INDICATE THE CURRENT FULL-TIME STAFF LEVELS IN YOUR OFFICE (LOCAL BRANCH).

	less than 3	between 3 and 5	between 5 and 10	between 10 and 20	more than 20
Partners					
Associates					
Architects					
Technicians					
Students					
Other (please specify)					

QUESTION 1.2 PLEASE INDICATE IN WHICH OF THE FOLLOWING GEOGRAPHIC AREAS YOUR LOCAL OFFICE IS SITUATED.

Western Cape	
Eastern Cape & Border	
Southern Transvaal	
Northern Transvaal	
Natal	
O.F.S & Northern Cape	

QUESTION 1.3 PLEASE INDICATE CURRENT WORK-MIX AS PERCENTAGE OF TOTAL WORK LOAD (TOTAL EQUALS 100%).

	public sector	private sector
Housing		
Industrial		
Commercial		
Engineering		
Renovations & Maintenance		
Other (please specify)		

QUESTION 1.4 PLEASE INDICATE THE FIRM'S AVERAGE GROSS ANNUAL TURNOVER, IN RESPECT OF BUILDING VALUE, OVER THE LAST 3 YEARS.

Average gross annual turnover in respect of building value over the last three years	R ----------

QUESTION 1.5 PLEASE INDICATE WHICH PROCUREMENT METHODS YOU HAVE BEEN INVOLVED IN OVER THE PAST TWELVE MONTHS.

	percentage of total	indicate the trend by marking the method which is increasing in use
Open tender		
Selected tender		
Negotiated contract		
Other (please specify)		

QUESTION 1.6 WHAT TYPE OF DOCUMENTATION HAVE YOU USED IN THE CONTRACT PROCUREMENT PROCESS OVER THE PAST TWELVE MONTHS ?

	percentage of total	indicate the trend by marking the method which is increasing in use
Bills of quantities		
Provisional bills		
Schedule of rates		
Other (please specify)		

QUANTITY SURVEYORS

SECTION ONE : DEMOGRAPHIC DATA

Unless otherwise requested, please place an " X " in the appropriate space provided.

QUESTION 1.1 PLEASE INDICATE THE CURRENT FULL-TIME STAFF LEVELS IN YOUR OFFICE (LOCAL BRANCH).

	less than 3	between 3 and 5	between 5 and 10	between 10 and 20	more than 20
Partners					
Associates					
Quantity Surveyors					
Technicians					
Students					
Other (please specify)					

QUESTION 1.2 PLEASE INDICATE TO WHICH QUANTITY SURVEYING CHAPTER YOUR OFFICE BELONGS.

Western Cape	
Eastern Cape & Border	
Southern Transvaal	
Northern Transvaal	
Natal	
O.F.S & Northern Cape	

QUESTION 1.3 PLEASE INDICATE YOUR CURRENT WORK-MIX AS A PERCENTAGE OF YOUR TOTAL WORK-LOAD (TOTAL EQUALS 100%).

	public sector	private sector
Housing		
Industrial		
Commercial		
Engineering		
Renovations & Maintenance		
Other (please specify)		

QUESTION 1.4 PLEASE INDICATE THE FIRM'S AVERAGE GROSS ANNUAL TURNOVER, IN RESPECT OF BUILDING VALUE, OVER THE LAST 3 YEARS.

Average gross annual turnover in respect of building value over the last three years	R ----------

QUESTION 1.5 PLEASE INDICATE WHICH CONTRACT PROCUREMENT METHODS YOU HAVE BEEN INVOLVED IN OVER THE PAST TWELVE MONTHS.

	percentage of total	indicate the trend by marking the method which is increasing in use
Open tender	51	14
Selected tender	31	50
Negotiated contract	17	33
Other (please specify)	1	3

QUESTION 1.6 WHAT TYPE OF DOCUMENTATION HAVE YOU USED IN THE CONTRACT PROCUREMENT PROCESS OVER THE PAST TWELVE MONTHS ?

	percentage of total	indicate the trend by marking the method which is increasing in use
Bills of quantities	65	31
Provisional bills	23	44
Schedules of rates	6	16
Other (please specify)	6	9

ARCHITECTS

SECTION ONE : DEMOGRAPHIC DATA

Unless otherwise required, please place an " X " in the appropriate space provided.

QUESTION 1.1 PLEASE INDICATE THE CURRENT FULL-TIME STAFF LEVELS IN YOUR OFFICE (LOCAL BRANCH).

	less than 3	between 3 and 5	between 5 and 10	between 10 and 20	more than 20
Partners					
Associates					
Architects					
Technicians					
Students					
Other (please specify)					

QUESTION 1.2 PLEASE INDICATE IN WHICH OF THE FOLLOWING GEOGRAPHIC AREAS YOUR LOCAL OFFICE IS SITUATED.

Western Cape	
Eastern Cape & Border	
Southern Transvaal	
Northern Transvaal	
Natal	
O.F.S & Northern Cape	

QUESTION 1.3 PLEASE INDICATE CURRENT WORK-MIX AS PERCENTAGE OF TOTAL WORK LOAD (TOTAL EQUALS 100%).

	public sector	private sector
Housing		
Industrial		
Commercial		
Engineering		
Renovations & Maintenance		
Other (please specify)		

QUESTION 1.4 PLEASE INDICATE THE FIRM'S AVERAGE GROSS ANNUAL TURNOVER, IN RESPECT OF BUILDING VALUE, OVER THE LAST 3 YEARS.

Average gross annual turnover in respect of building value over the last three years	R ----------

QUESTION 1.5 PLEASE INDICATE WHICH PROCUREMENT METHODS YOU HAVE BEEN INVOLVED IN OVER THE PAST TWELVE MONTHS.

	percentage of total	indicate the trend by marking the method which is increasing in use
Open tender	34,42	14,5
Selected tender	40,02	38,7
Negotiated contract	23,73	43,5
Other (please specify)	0,98	3,2.

QUESTION 1.6 WHAT TYPE OF DOCUMENTATION HAVE YOU USED IN THE CONTRACT PROCUREMENT PROCESS OVER THE PAST TWELVE MONTHS ?

	percentage of total	indicate the trend by marking the method which is increasing in use
Bills of quantities	47,18	27,1
Provisional bills	23,34	44,1
Schedule of rates	11,13	13,6
Other (please specify)	18,20	15,3

APPENDIX C

THE BER BUILDING COST INDEX SURVEY DATA

BER DATA

DATE	GOVERNMENT			COMMERCIAL			INDUSTRI
	OPEN	CLOSED	NEGOT'	OPEN	CLOSED	NEGOT'	OPEN
1983	59	0	0	6	9	1	1
	62	0	1	10	6	1	1
	103	1	1	11	4	1	1
	81	1	0	9	9	5	3
1984	44	0	1	12	7	4	4
	14	0	0	6	6	2	3
	44	1	0	6	2	0	7
	7	1	0	6	1	0	1
1985	26	0	0	6	0	1	4
	44	0	0	3	2	0	1
	54	0	3	6	12	1	2
	51	1	0	4	3	0	0
1986	31	1	1	4	2	0	0
	10	1	0	2	3	0	0
	20	0	0	2	2	0	0
	40	3	0	7	4	1	1
1987	15	2	0	3	7	1	0
	33	0	1	4	7	0	0
	36	2	1	3	6	1	0
	50	4	1	7	6	5	3
1988	52	0	1	10	12	3	4
	61	4	1	8	7	3	5
	60	6	0	8	12	6	10
	54	8	1	5	9	1	2
1989	35	3	1	8	10	11	5
	44	1	1	7	7	5	2
	53	3	0	9	14	6	3
	48	3	1	6	16	3	4
1990	22	3	0	6	17	7	3
	19	0	2	4	19	4	3
	1272	49	18	188	221	73	73
	95%	4	1	39	46	15	42
		1339			482		

SINCE 1988 TOTALS

448	31	8	71	123	49	41
92%	6	2	29	51	20	39
	487			243		

1983 TO 1988 TOTALS

824	18	10	117	98	24	32
97%	2	1	49	41	10	46
	852			239		

L CLOSED	NEGOT'	HOUSING OPEN	CLOSED	NEGOT'	OTHER OPEN	CLOSED	NEGOT'	
3	0	0	0	0	1	0	0	
1	0	3	2	1	0	0	0	
1	0	3	4	0	5	3	0	
2	0	2	0	0	1	1	0	
11	1	9	1	0	2	1	0	
1	0	2	3	1	2	3	0	
4	0	9	2	2	6	4	1	
0	0	2	0	1	4	3	0	
1	1	3	3	0	4	1	0	
0	0	2	1	0	1	2	0	
1	0	1	1	0	1	1	0	
0	0	0	0	0	3	2	1	
0	0	1	0	0	1	1	0	
1	0	0	0	0	2	0	0	
0	0	1	0	0	2	1	0	
0	0	1	1	0	3	0	0	
1	0	1	0	0	2	0	0	
0	0	3	0	0	2	1	0	
3	2	0	1	0	1	3	0	
3	0	4	5	2	2	1	0	
4	2	5	2	1	5	4	0	
5	0	1	5	3	3	1	0	
8	4	4	2	2	3	2	0	
7	0	6	8	2	1	5	1	
6	2	3	3	0	3	0	2	
2	3	3	3	2	8	4	1	
7	0	4	0	1	1	4	0	
5	0	1	2	0	7	4	0	
2	1	2	5	1	2	0	0	
5	0	3	3	0	3	0	1	
84	16	79	57	19	81	52	7	
49	9	51	37	12	58	37	5	
173			155			140		
51	12	32	33	12	36	24	5	
49	12	42	43	16	55	37	8	
104			77			65		
33	4	47	24	7	45	28	2	
48	6	60	31	9	60	37	3	
69			78			75		

TOTALS ALL SECTORS OPEN	CLOSED	NEGOT	GRAND TOTAL
67	12	1	80
76	9	3	88
123	13	2	138
96	13	5	114
71	20	6	97
27	13	3	43
72	13	3	88
20	5	1	26
43	5	2	50
51	5	0	56
64	15	4	83
58	6	1	65
37	4	1	42
14	5	0	19
25	3	0	28
52	8	1	61
21	10	1	32
42	8	1	51
40	15	4	59
66	19	8	93
76	22	7	105
78	22	7	107
85	30	12	127
68	37	5	110
54	22	16	92
64	17	12	93
70	28	7	105
66	30	4	100
35	27	9	71
32	27	7	66
1693	463	133	2289
74	20	6	
628	262	86	976
64	27	9	
1065	201	47	1313
81	15	4	

APPENDIX D

CAPE PENINSULA MASTER BUILDERS ASSOCIATION

- TENDERING RECORDS

CAPE PENINSULA MBA TENDERING STATISTICS

MONTHLY TOTALS				FOUR MONTH MOVING AVERAGE			
TENDERS	AVE. BID	TOTAL	AVERAGE	DATE '79	NO OF TENDERS	TENDER PRICE IN THOUSANDS	NO OF TENDERERS
4.00	8.50	3362342.00	84284.00	J	6.25	3684.93	8.56
8.00	9.13	2652371.00	32717.25	F	6.50	3291.72	9.14
6.00	9.33	6655038.00	99164.17	M	5.75	3388.23	8.30
7.00	7.29	2069972.00	43735.14	A	6.75	2632.68	7.87
5.00	10.80	1789487.00	29891.60	M	8.00	4427.05	8.03
5.00	5.80	3038425.00	89074.60	J	8.75	4977.67	7.39
10.00	7.60	3632853.00	76995.90	J	11.25	14177.44	7.29
12.00	7.92	9247441.00	96587.67	A	11.75	16553.49	7.10
8.00	8.25	3991947.00	62640.63	S	11.75	16661.59	6.45
15.00	5.40	39837519.00	187586.13	O	12.00	16727.93	5.92
12.00	6.83	13137071.00	141126.67	N	10.50	9932.32	6.23
12.00	5.32	9679834.00	150720.70	D/J	10.00	8996.27	6.50
9.00	6.11	4257279.00	44625.56	F	10.25	16058.00	6.65
9.00	6.67	12655100.00	105275.00	M	10.75	16724.69	6.53
10.00	7.90	9392862.00	158302.40	A	12.50	15413.96	5.94
13.00	5.92	37926775.00	367061.23	M	13.50	15648.41	5.25
11.00	5.64	6924021.00	96379.27	J	14.25	8257.75	4.80
16.00	4.31	7412168.00	74447.00	J	15.75	8971.82	4.38
14.00	5.14	10330664.00	358319.14	A	16.00	10356.89	4.77
16.00	4.13	8364156.00	86719.69	S	15.50	10285.62	4.86
17.00	3.94	9780276.00	253587.06	O	15.75	11462.96	4.97
17.00	5.88	12952459.00	136924.71	N	15.50	11714.36	5.15
12.00	5.51	10045583.00	135601.25	D/J	13.50	9656.19	4.60
17.00	4.53	13073522.00	124749.06	F	12.00	8122.56	4.35
16.00	4.69	10785877.00	141295.56	M	10.00	5846.88	4.27
9.00	3.67	4719766.00	68012.00	A	9.25	6966.39	4.44
6.00	4.50	3911072.00	118415.83	M	11.75	13615.36	4.66
9.00	4.22	3970804.00	71069.33	J	13.75	21244.70	4.78
13.00	5.38	15263922.00	151788.46	J	13.00	21261.13	4.98
19.00	4.53	31315650.00	234450.63	A	13.50	22386.43	5.06
14.00	5.00	34428433.00	425396.43	S	10.75	21420.04	5.56
6.00	5.00	4036531.00	92390.00	O	8.75	14847.16	5.81
15.00	5.73	19765110.00	174791.13	N	10.00	16290.39	6.26
8.00	6.50	27450105.00	278745.42	D/J	8.00	13884.85	6.58
6.00	6.00	8136909.00	213012.67	F	8.25	16195.72	7.26
11.00	6.82	9809428.00	117445.36	M	8.75	15126.41	7.82
7.00	7.00	10142964.00	244754.14	A	7.00	13678.49	7.81
9.00	9.22	36693590.00	706683.22	M	8.25	14441.88	7.60
8.00	8.25	3859654.00	89778.25	J	10.00	7597.64	7.15
4.00	6.75	4017757.00	139165.00	J	9.50	43611.24	6.67
12.00	6.17	13196517.00	179785.42	A	11.00	45992.01	7.21
16.00	7.44	9316651.00	83939.31	S	11.75	46870.89	8.35
6.00	6.33	147914046.00	5120125.17	O	10.25	50412.66	8.31
10.00	8.90	13540815.00	169115.30	N	10.75	17199.93	8.20
15.00	10.71	16712046.00	156820.79	D/J	12.50	16689.58	7.60
10.00	7.30	23483729.00	285369.70	F	12.00	18155.08	6.48
8.00	5.88	15063115.00	266496.50	M	14.00	17043.62	6.31
17.00	6.53	12299413.00	106441.24	A	16.75	21756.85	6.26
13.00	6.23	21774059.00	171195.54	M	18.50	29073.85	5.94
18.00	6.61	19037905.00	91361.44	J	18.75	26997.27	5.55
19.00	5.68	33916014.00	279997.47	J	18.50	30696.35	5.20
24.00	5.25	41567414.00	184639.04	A	16.00	24087.31	4.95
14.00	4.64	13467746.00	134993.36	S	15.25	24618.36	5.29

17.00	5.24	33834236.00	232882.76	O	12.50	22121.49	6.54
9.00	4.67	7479827.00	70884.22	N	11.25	16065.88	6.73
21.00	6.60	43691623.00	187918.17	D/J	10.75	19356.85	6.92
3.00	9.67	3480259.00	149585.00	F	8.25	17088.68	7.07
12.00	6.00	9611818.00	97017.67	M	8.50	18205.73	6.28
7.00	5.43	20643685.00	586100.86	A	7.25	30784.10	6.60
11.00	7.18	34618962.00	399353.55	M	9.25	29180.88	6.91
4.00	6.50	7948464.00	185597.00	J	9.75	23971.90	7.42
7.00	7.29	59925282.00	2381856.57	J	10.75	29018.95	8.33
15.00	6.67	14230820.00	101170.40	A	11.50	15803.34	8.78
13.00	9.23	13783023.00	186870.38	S	7.75	12245.63	7.11
8.00	10.13	28136663.00	673459.00	O	7.25	13186.62	8.12
10.00	9.10	7062852.00	76451.50	N	6.75	7935.69	8.97
0.00	0.00	0.00	0.00	D/J	6.75	9911.45	9.59
11.00	13.27	17546952.00	362039.09	F	8.50	13019.78	12.52
6.00	13.50	7132955.00	165784.50	M	7.75	17634.92	11.61
10.00	11.60	14965910.00	157019.20	A	8.75	20110.08	11.03
7.00	11.71	12433308.00	187504.57	M	9.25	25404.89	10.76
8.00	9.63	36007493.00	399828.50	J	9.25	30172.90	10.47
10.00	11.20	17033612.00	177837.00	J	9.50	25150.64	10.73
12.00	10.50	36145158.00	236076.58	A	9.00	23345.39	10.00
7.00	10.57	31505355.00	486854.71	S	9.50	23240.01	10.07
9.00	10.67	15918445.00	192893.33	O	10.00	21198.74	9.79
8.00	8.25	9812616.00	181882.88	N	9.75	23674.77	9.71
14.00	10.79	35723605.00	193914.84	D/J	10.25	23699.93	10.98
9.00	9.44	23340275.00	222652.00	F	9.50	18584.64	11.08
8.00	10.38	25822583.00	284080.75	M	9.25	18581.82	10.71
10.00	13.30	9913256.00	165797.50	A	9.75	16678.11	10.10
11.00	11.18	15262457.00	305474.18	M	10.25	20305.27	8.92
8.00	8.00	23329001.00	172501.63	J	8.75	20313.68	8.62
10.00	7.90	18207720.00	222404.00	J	10.00	24785.84	8.52
12.00	8.58	24421916.00	119517.75	A	10.00	24092.39	8.80
5.00	10.00	15296071.00	368665.60	S	11.50	27046.35	8.78
13.00	7.62	41217660.00	419683.08	O	13.00	31969.60	8.74
10.00	9.00	15433897.00	187240.70	N	11.50	24791.07	8.80
18.00	8.52	36237791.00	181044.97	D/J	11.75	23702.58	8.43
11.00	9.82	34989046.00	236647.64	F	9.00	18530.85	7.88
7.00	7.86	12503553.00	181702.86	M	8.00	11363.51	7.14
11.00	7.55	11079925.00	84771.09	A	8.50	11326.66	6.56
7.00	6.29	15550886.00	152590.43	M	7.25	19188.70	6.09
7.00	6.86	6319673.00	85919.14	J	7.00	17098.44	6.02
9.00	5.56	12356145.00	139820.33	J	8.00	21649.79	5.40
6.00	5.67	42528091.00	697744.67	A	8.00	25237.09	5.81
6.00	6.00	7189834.00	81762.00	S	8.25	20671.18	6.40
11.00	4.36	24525070.00	135961.55	O	10.50	28921.70	6.53
9.00	7.22	26705368.00	223805.22	N	11.25	31239.29	7.03
7.00	8.00	24264446.00	164226.43	D/J	10.00	26340.71	7.04
15.00	6.53	40191915.00	149275.07	F	9.75	23462.55	6.45
14.00	6.36	33795434.00	284345.00	M	8.25	18889.27	6.12
4.00	7.25	7111039.00	306862.00	A	7.00	14221.63	5.73
6.00	5.67	12751796.00	211550.00	M	7.75	15735.74	5.49
9.00	5.22	21898799.00	214940.00	J	7.50	14788.63	6.32
9.00	4.78	15124882.00	110576.78	J	7.00	12410.13	6.55
7.00	6.29	13167495.00	140068.86	A	8.00	13941.39	6.95
5.00	9.00	8963354.00	168601.00	S	7.75	13594.25	7.13
7.00	6.14	12384793.00	198567.14	O			
13.00	6.38	21249933.00	193687.46	N			
6.00	7.00	11778920.00	137700.17	D			
95.00	70.62	198418360.00	2116173.47				